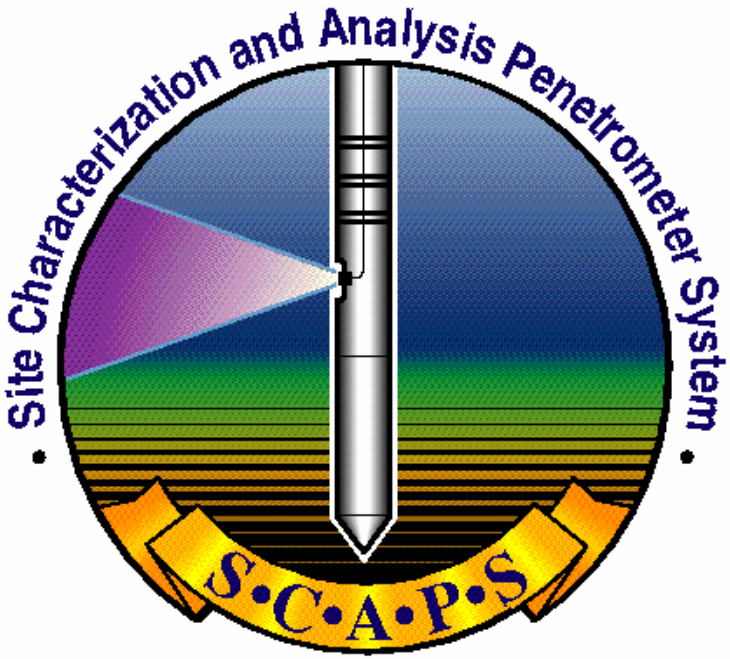
SCAPS Laser Induced Fluorescence Investigation



RPM Meeting
Naval Air Station Fallon
April 26, 2007

Tim Shields
Richard Brady & Associates

Purpose of SCAPS Investigation

- Free product acts as a continuous source of dissolved phase groundwater contamination and vapor intrusion
- Removal of free product is required by NDEP and is generally the first step in site closure
- Free product contamination at Sites 1, 2, 14, 16, UST 395, and UST 806 is not fully delineated

GOALS OF INVESTIGATION:

- Identify source or sources of free product
- Define lateral and vertical extent of free product at each site

For comparison, SDSU research on hydrocarbon saturation at a site in San Diego.

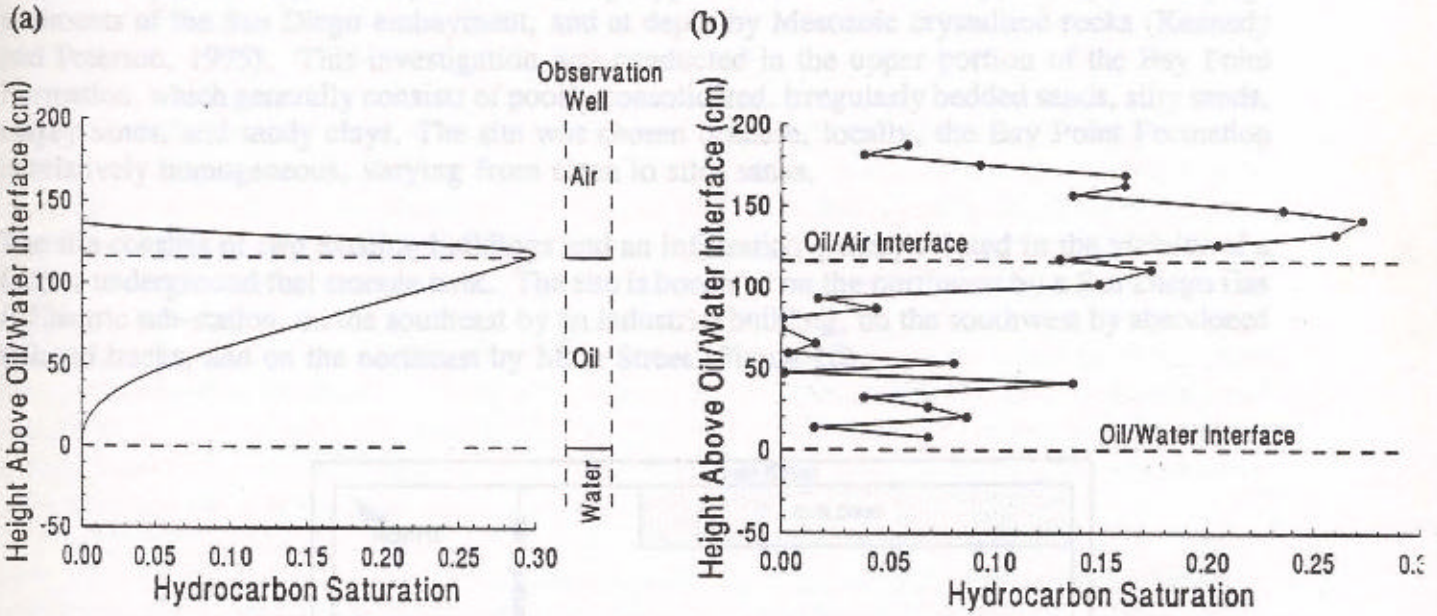
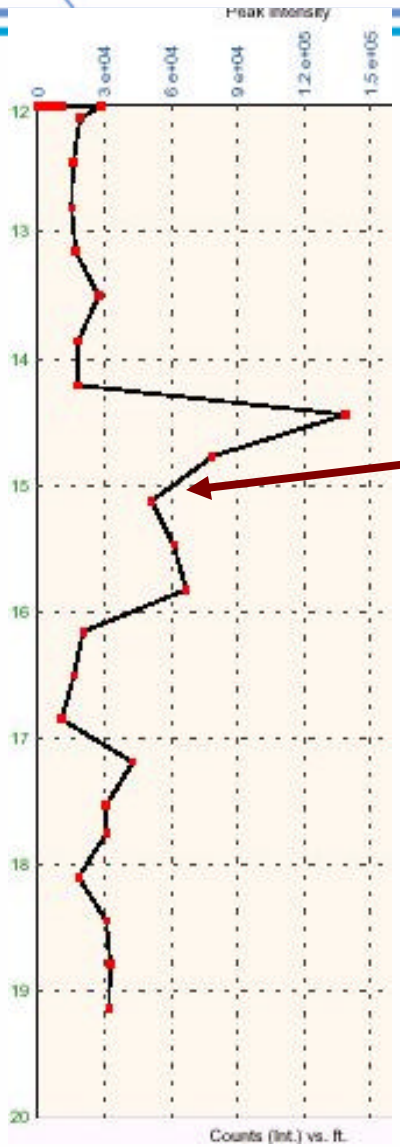
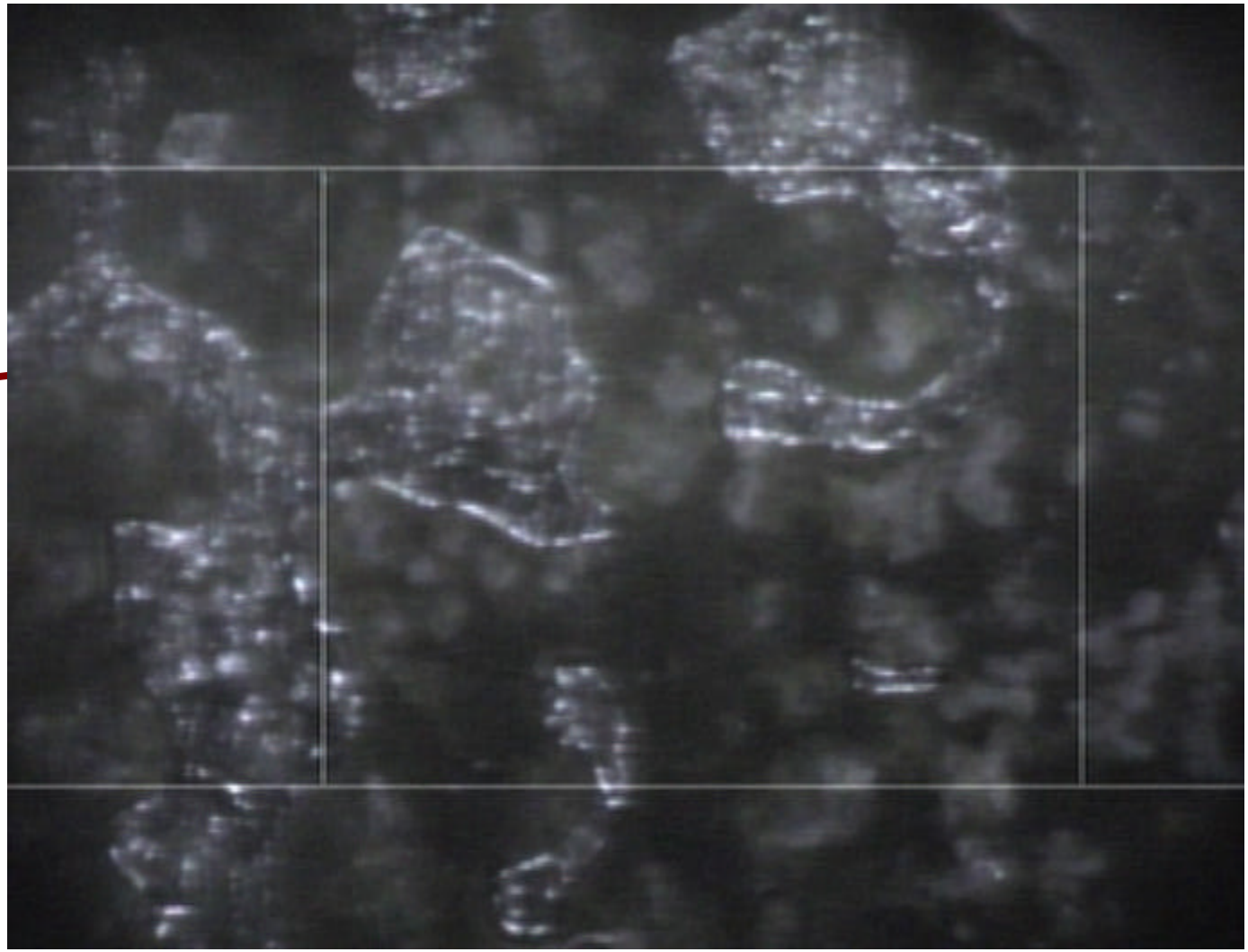


Figure 9. Theoretical (a) and measured (b) hydrocarbon distribution for a site in downtown San Diego with 116 cm of observed hydrocarbon in a monitoring well. Soil is a fine- to medium-grained, poorly consolidated sandstone of the Bay Point Formation.

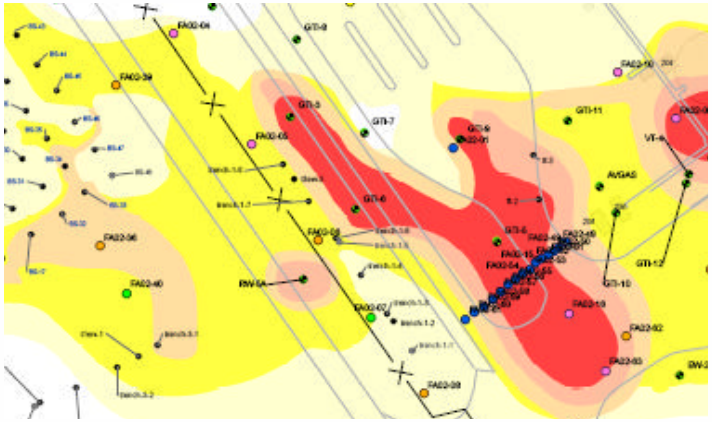
Generalized SCAP LIF Response in Sand

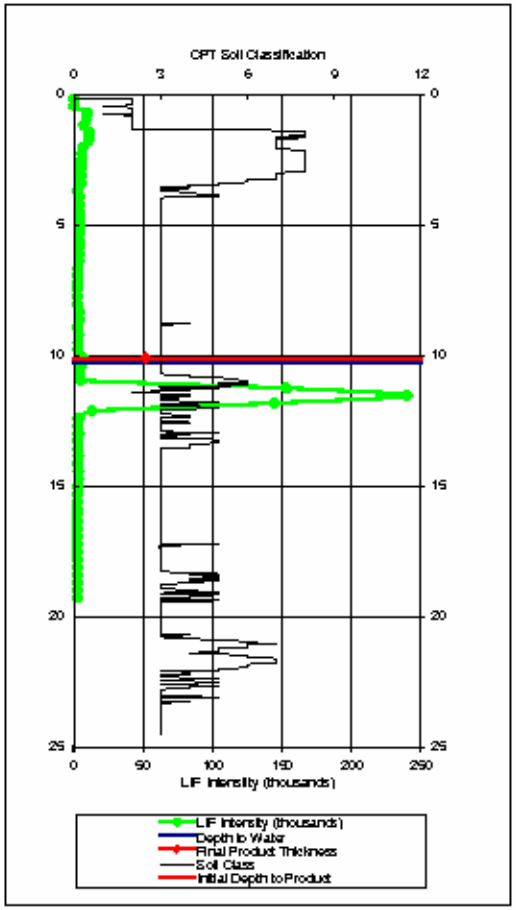




First SCAPS Push at IR Site 2

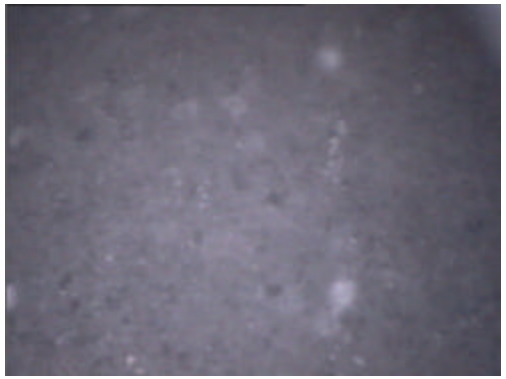
Well ID	DTP (ft bTOC) Jan 2007	DTW (ft bTOC) Jan 2007	Product Thickness (ft) Jan 2007
GTI-9	9.45	11.19	1.74





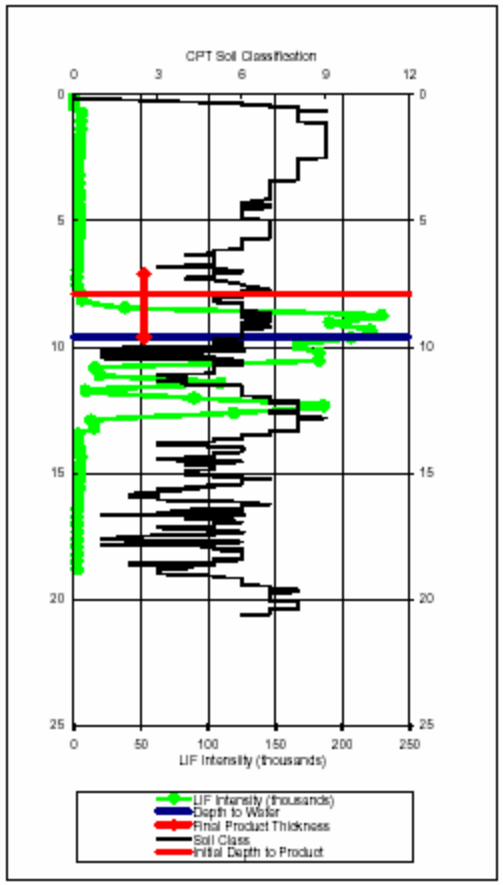
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
	10.27	10.26	sheen

CPT Soil Classification, Robertson and Campenella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained *
12 Sand to clayey sand *
* = overconsolidated or cemented.



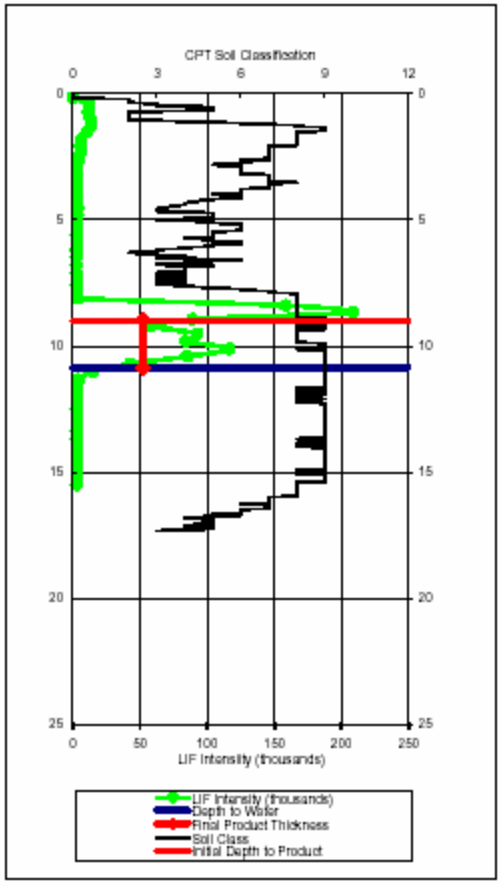
Selected Site 2 Locations Showing LIF and Product

FA02-09-LIF



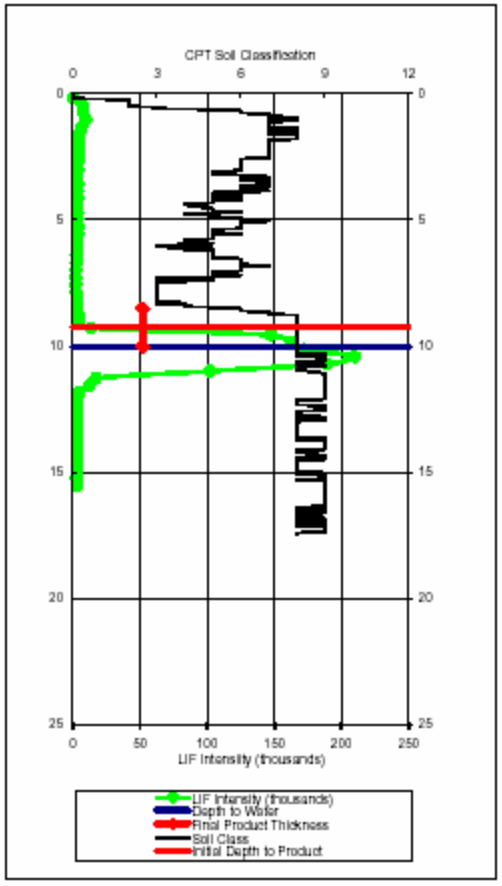
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	9.6	7.89	2.5

FA02-15-LIF



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	10.86	8.99	1.93

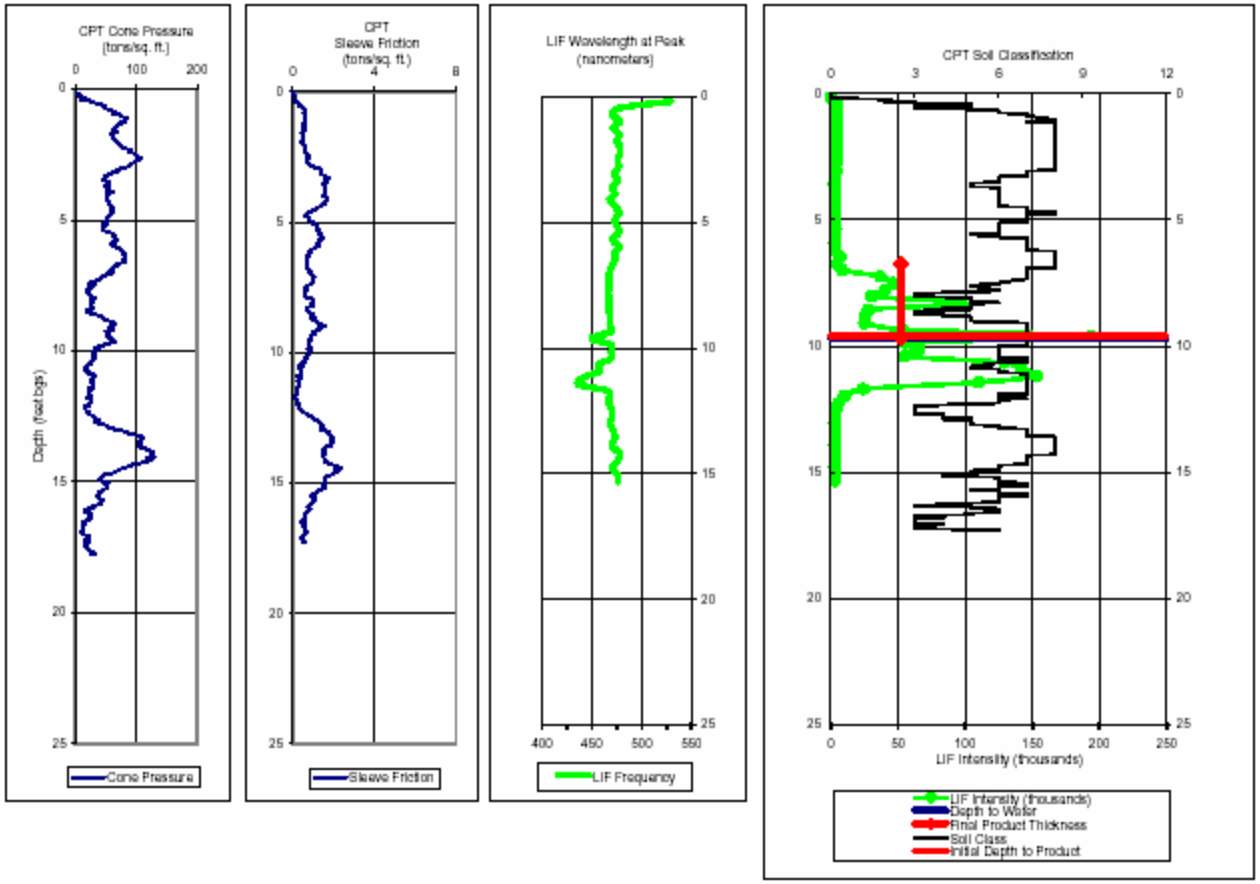
FA02-81-LIF



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	10.02	9.25	>1.5

LIF and Product

Summary Log for FA02-10-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

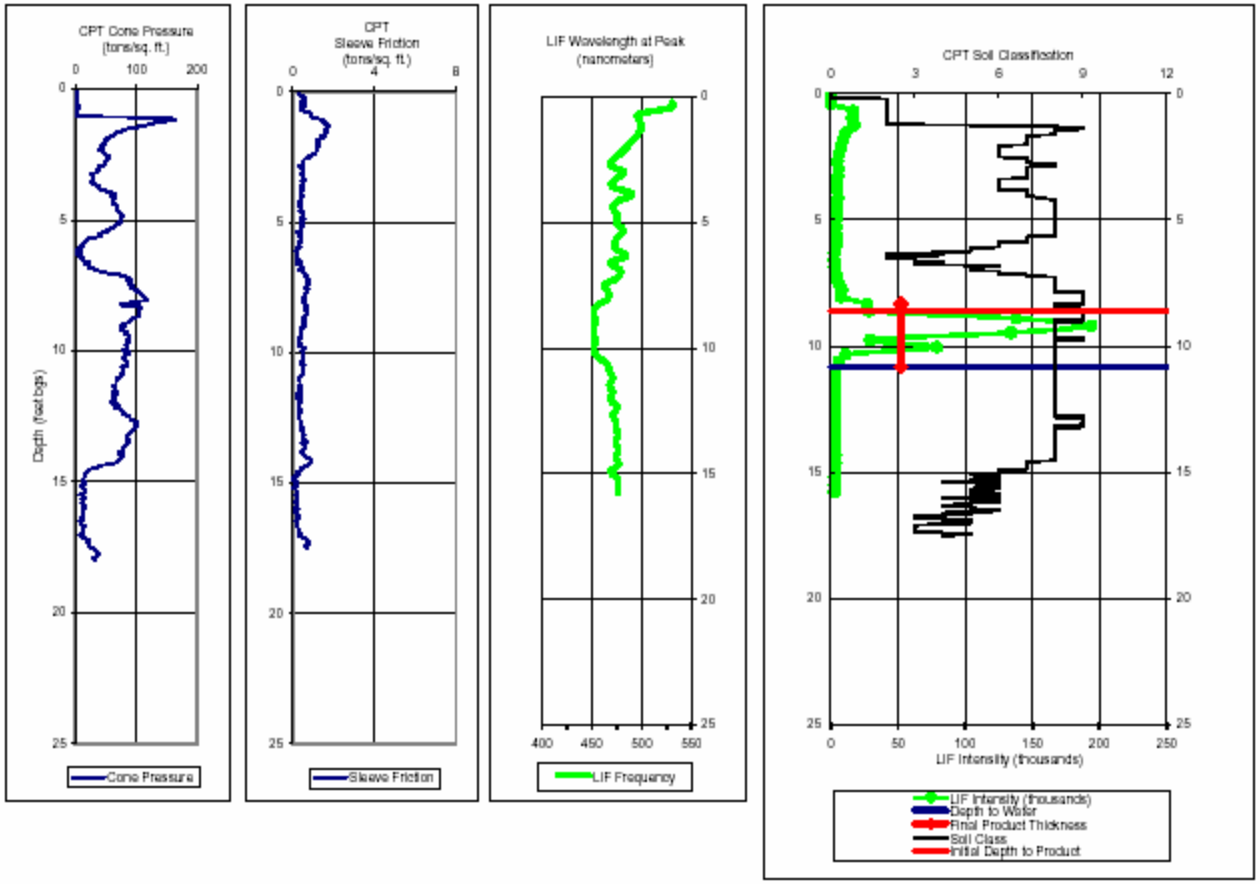


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	9.74	9.73	3.0

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

LIF and Product

Summary Log for FA02-16-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

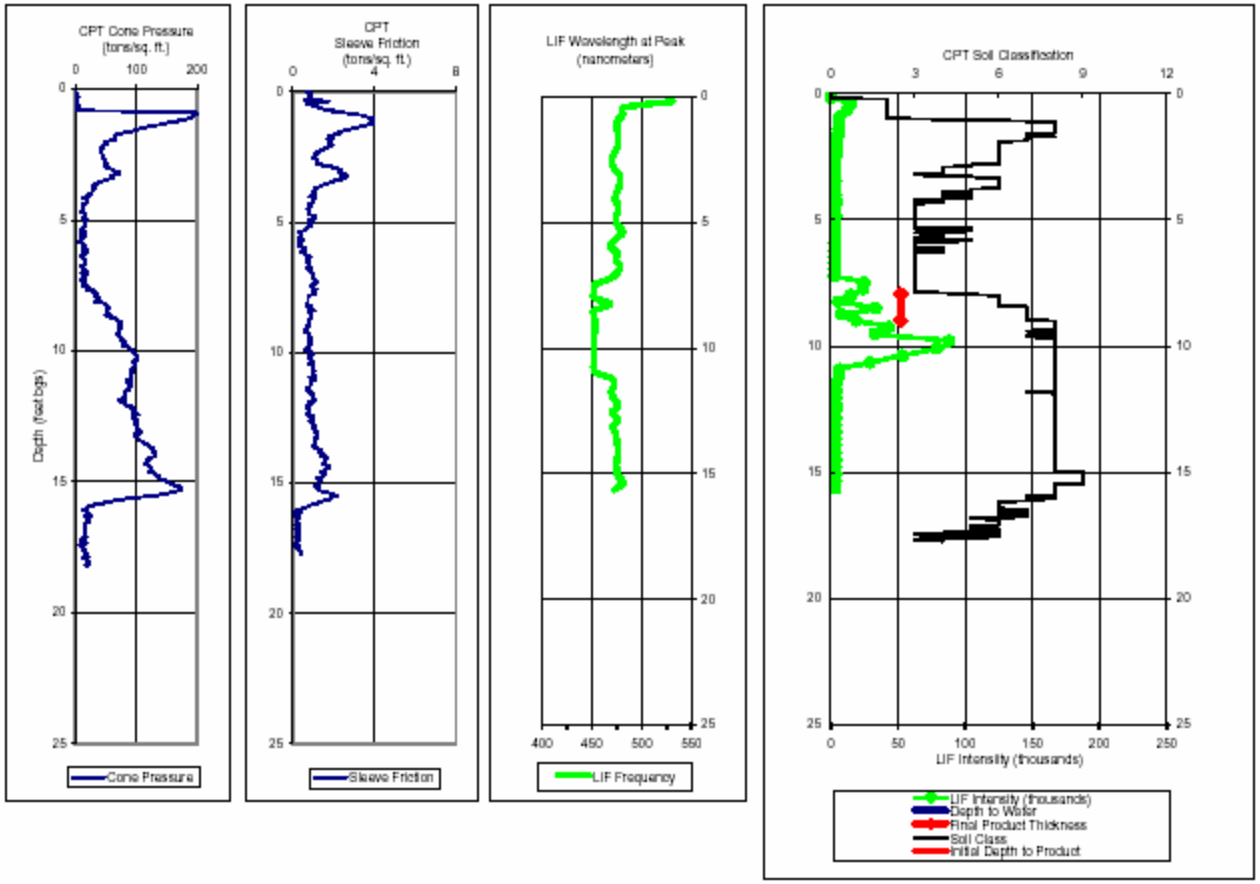


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	10.83	8.59	2.30

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

LIF and Product

Summary Log for FA02-52-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

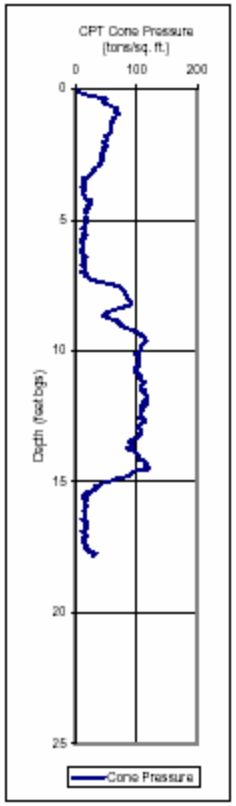


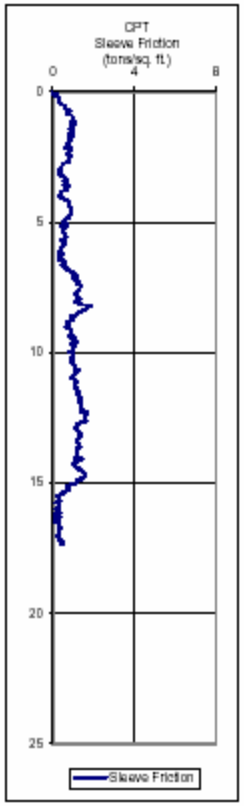
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
4-9 (ft bgs)			>1

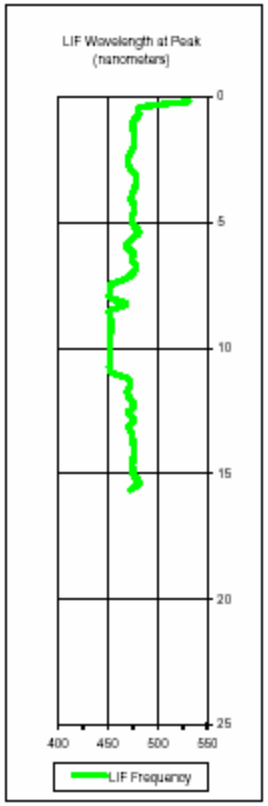
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

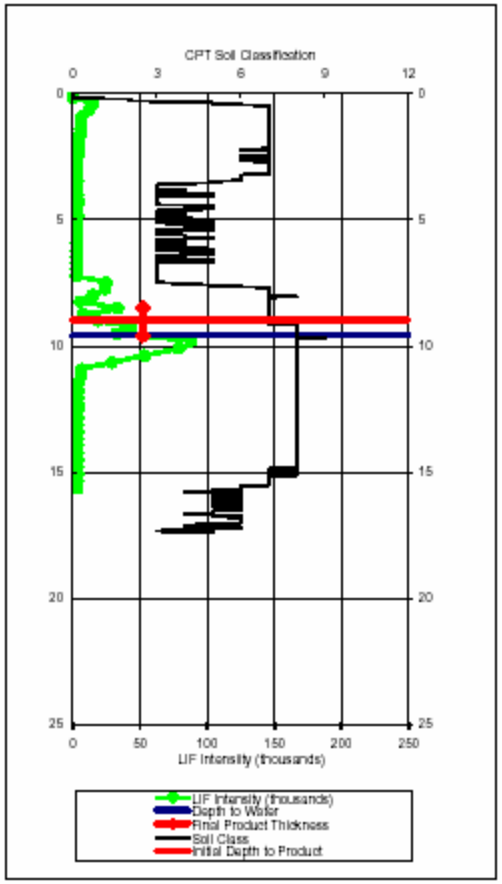
LIF and Product

Summary Log for FA02-53-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data







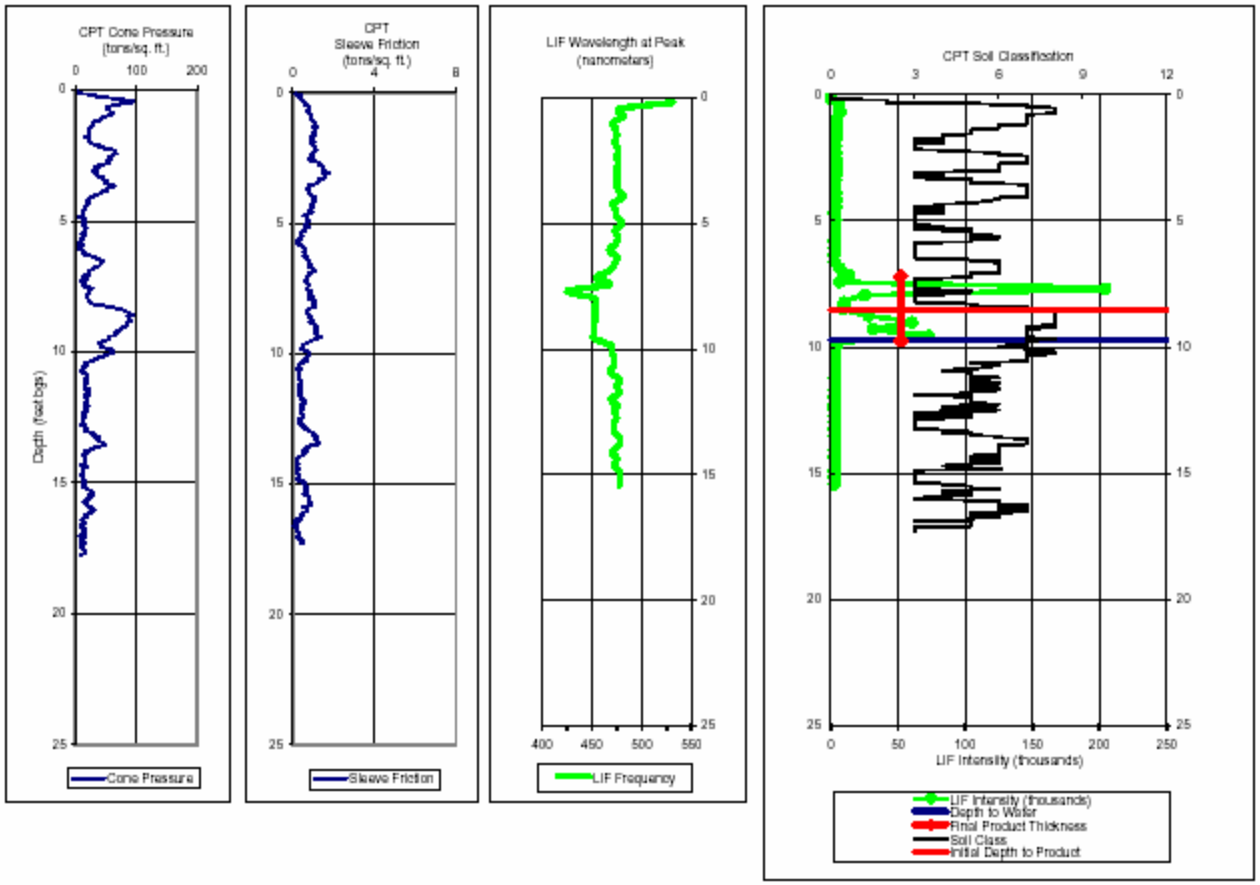


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	9.59	8.97	>1

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

LIF and Product

Summary Log for FA02-57-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

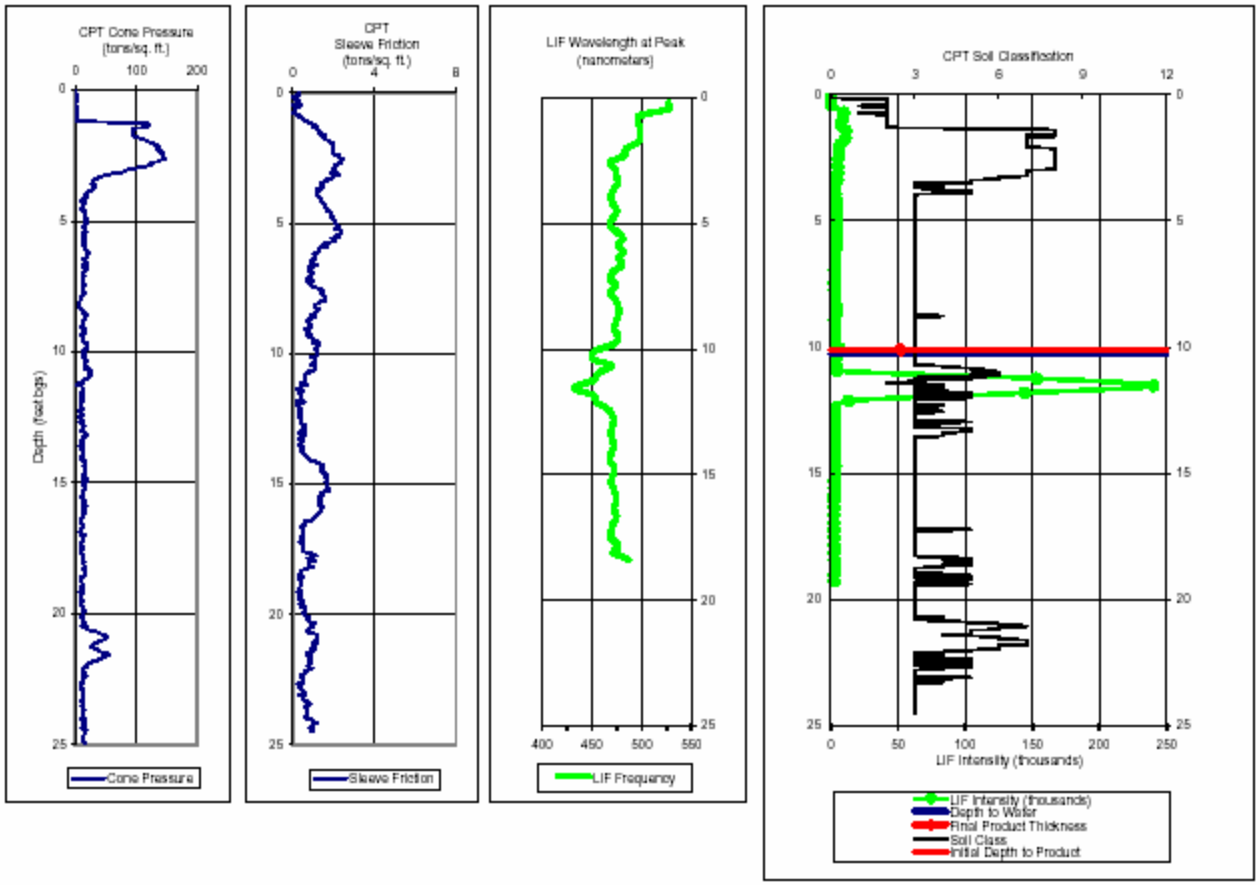


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	9.74	8.52	>2.5

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

LIF below water table, no product

Summary Log for FA02-01-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

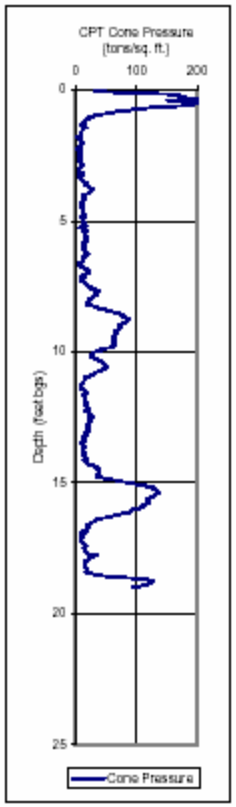


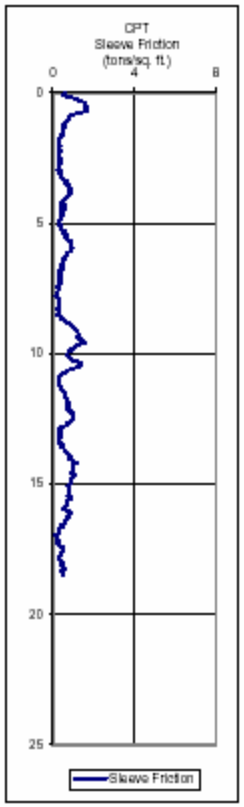
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
	10.27	10.26	sheen

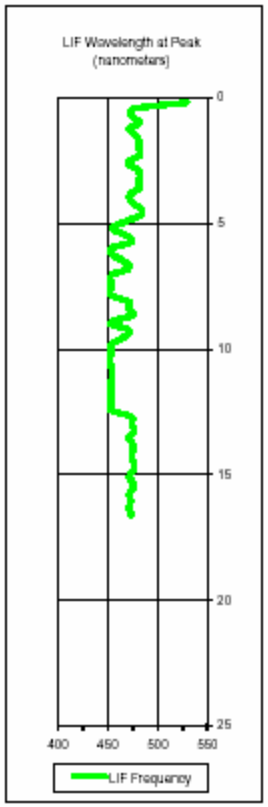
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

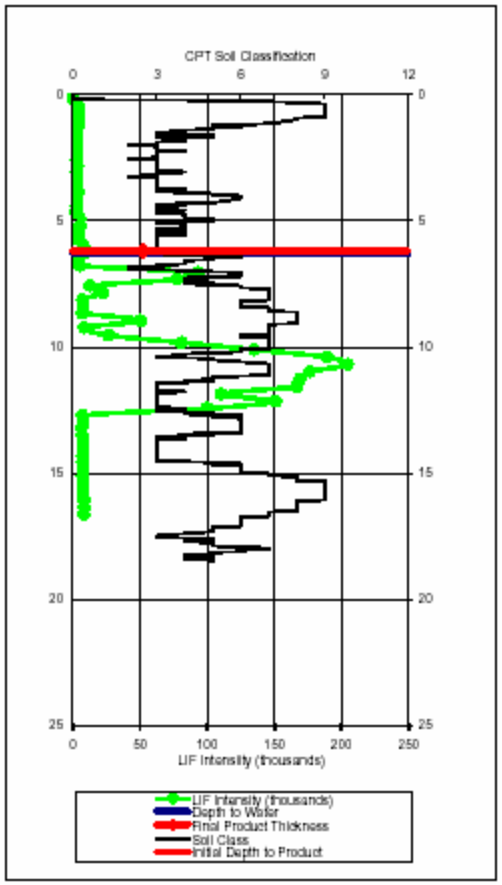
LIF below water table, no product

Summary Log for FA02-04-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data







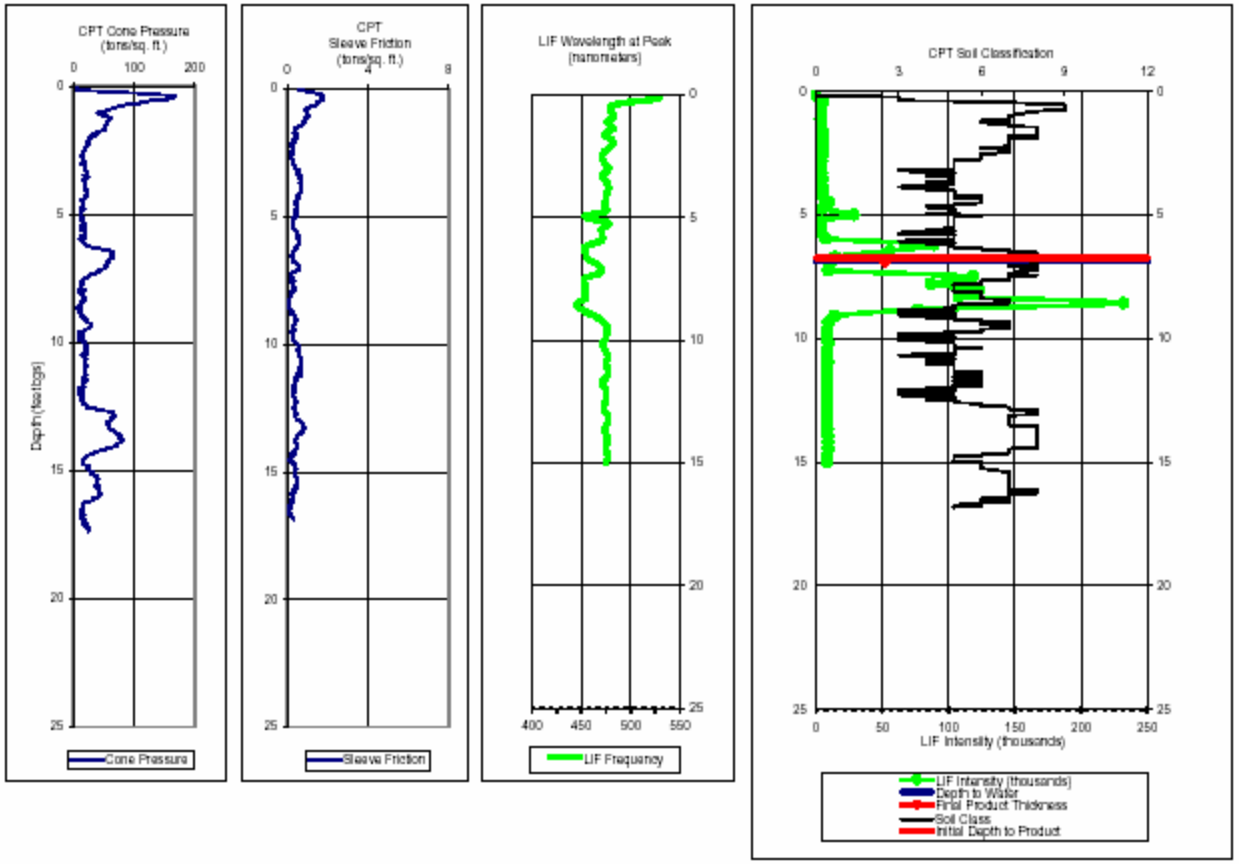


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
0-10 (ft bgs)	6.34	6.33	0.01

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

LIF below water table, no product

Summary Log for FA02-05-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

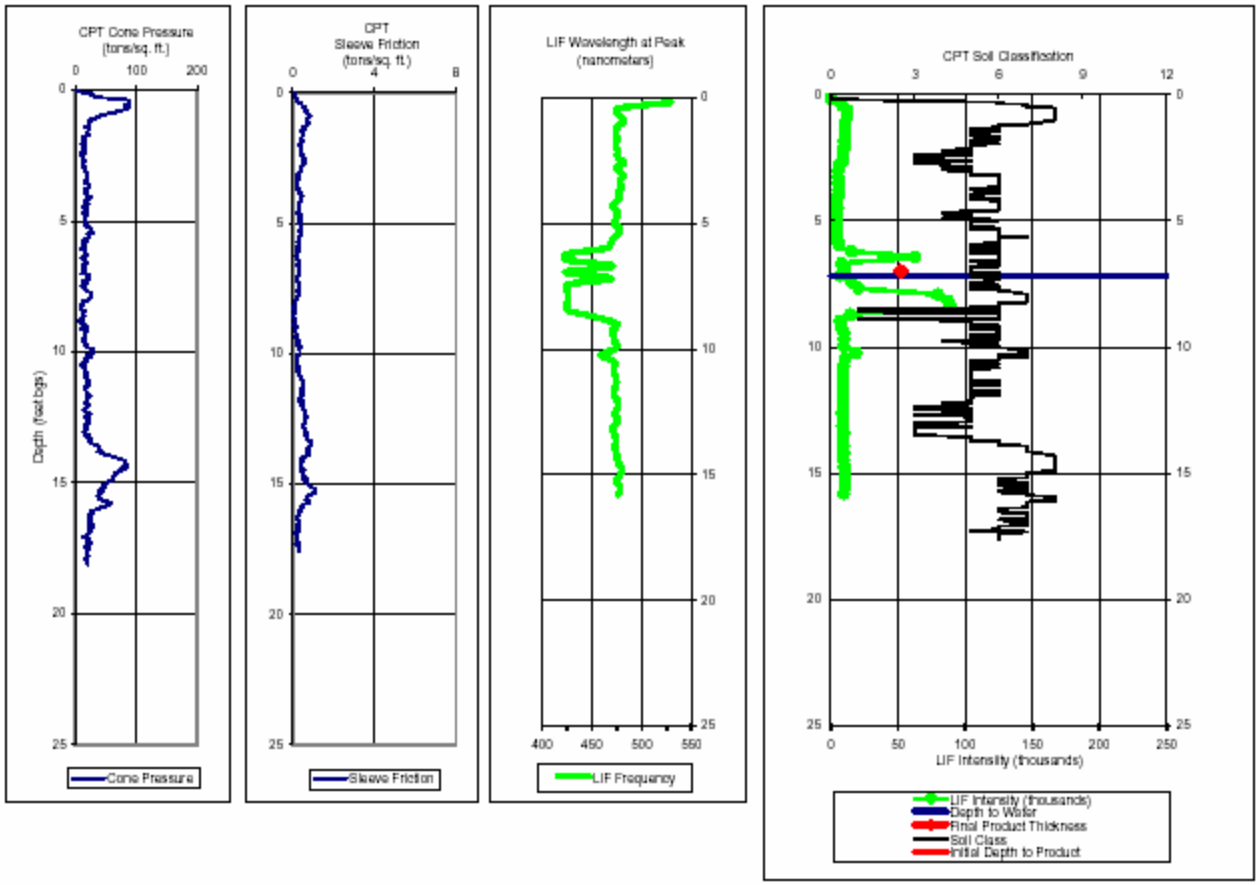


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5.19-10.19 (ft bgs)	6.87	6.87	0.01

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Less Product than Expected

Summary Log for FA02-06-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

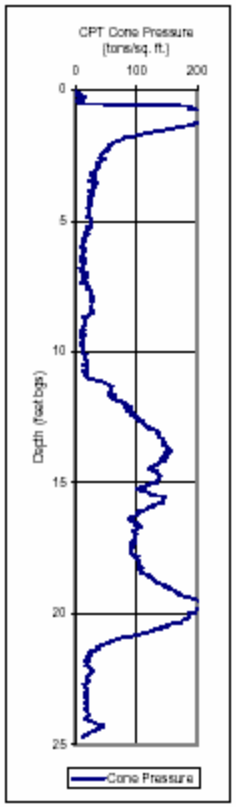


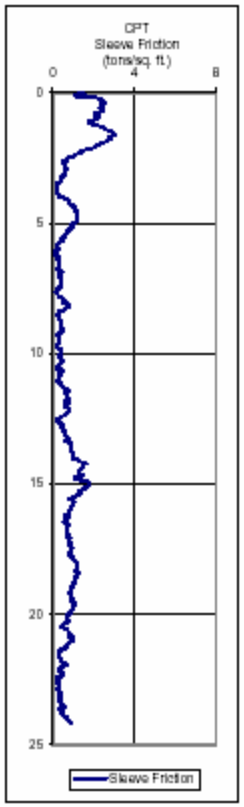
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	7.21	no product	0.01

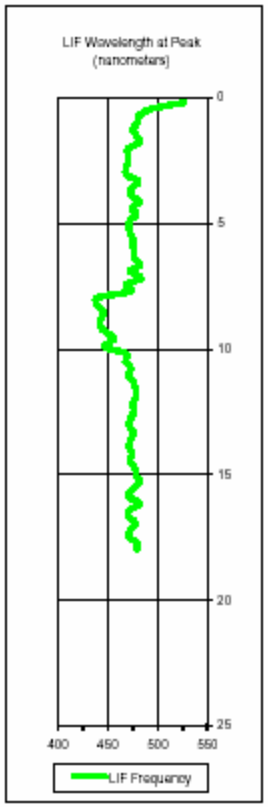
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

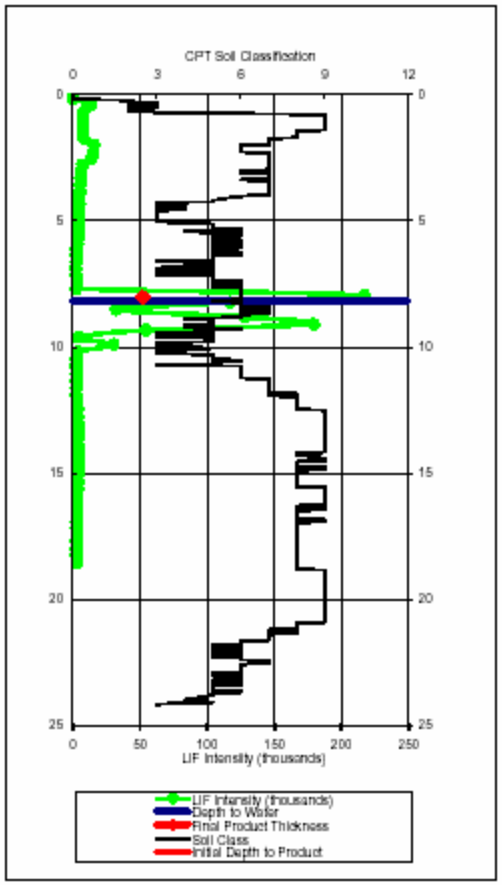
Less Product than Expected

Summary Log for FA02-14-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data







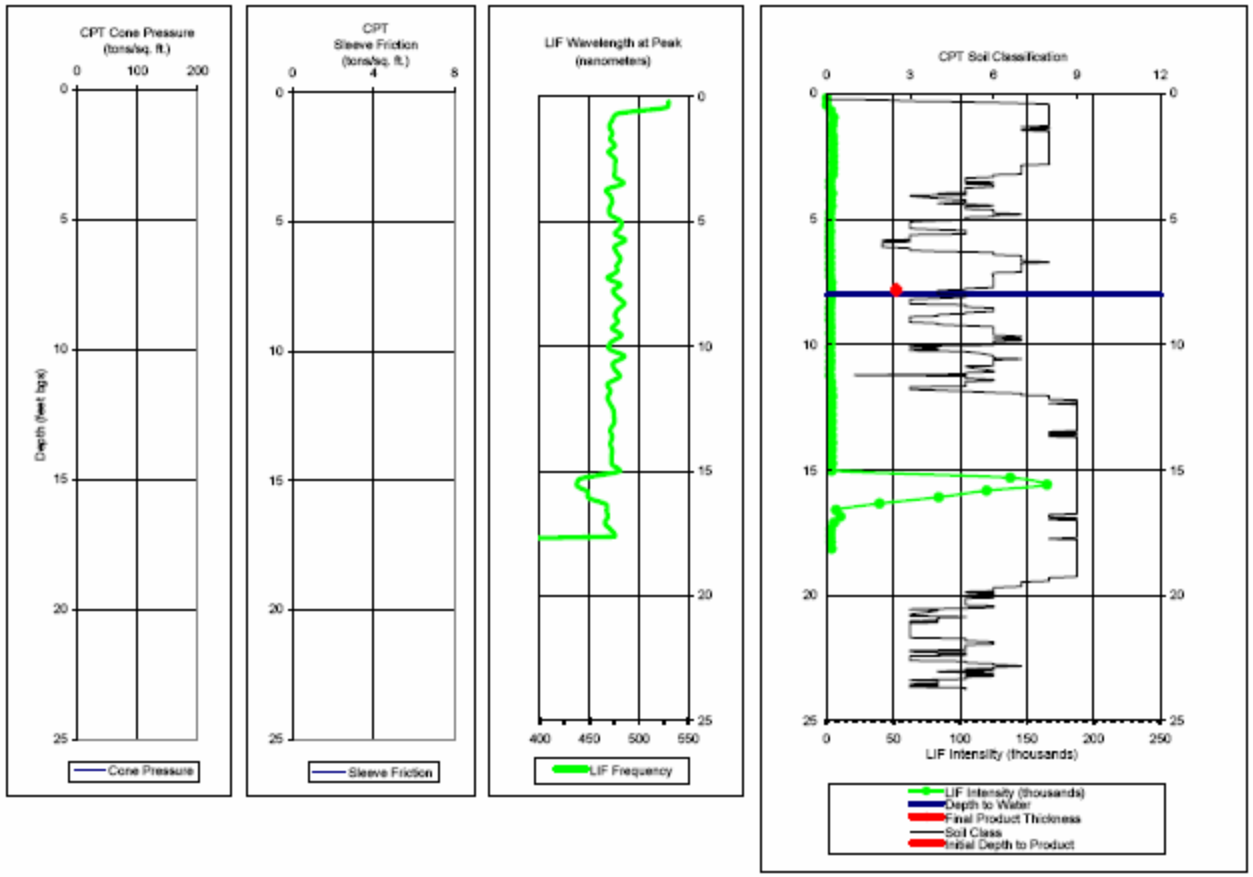


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
6-11 (ft bgs)	8.17		0.01

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Less Product than Expected

Summary Log for FA02-13-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



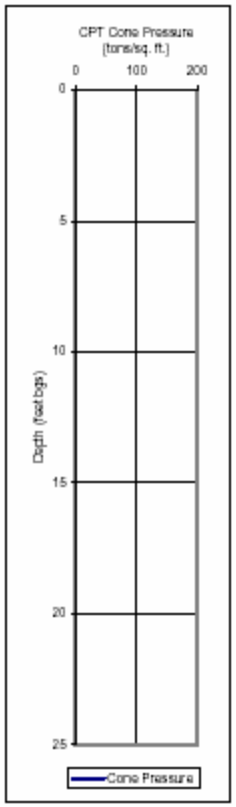
4-19 (ft bgs)	8.00		0.01

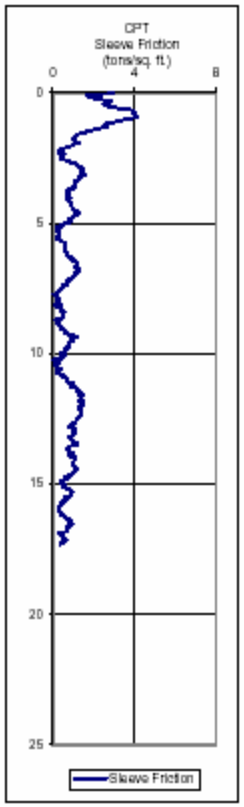
CPT Soil Classification, Robertson and Campanella, 1988

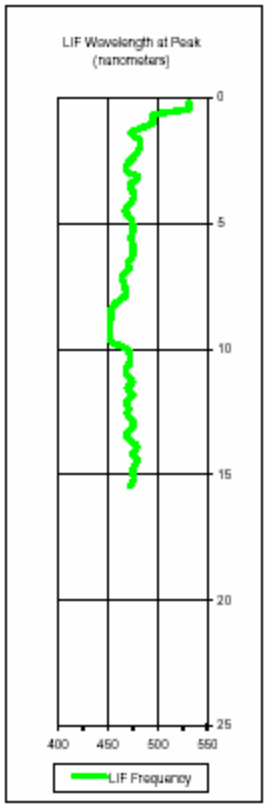
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

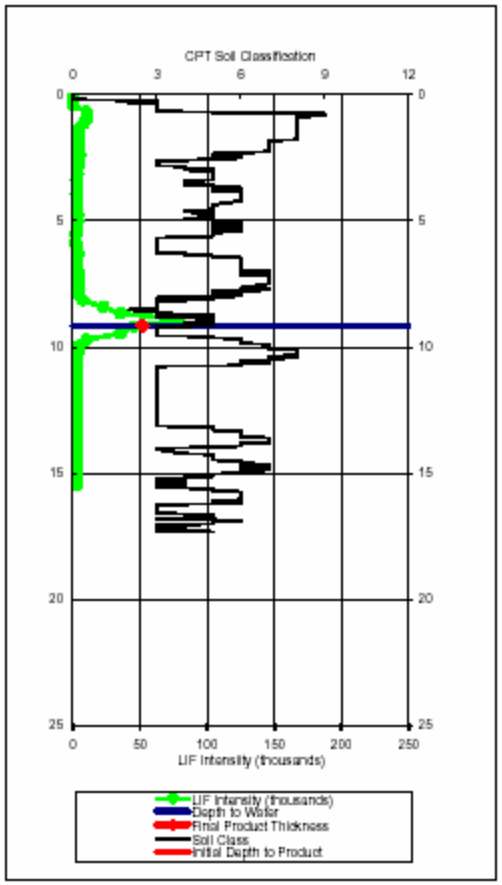
Less Product than Expected

Summary Log for FA02-61-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data







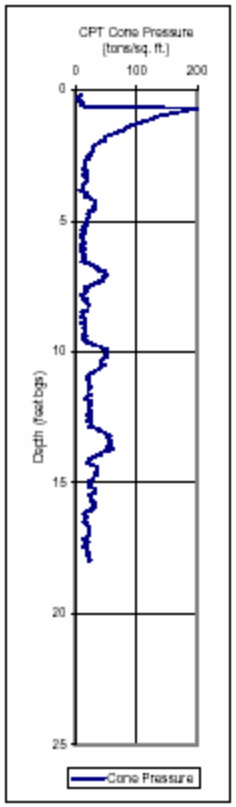


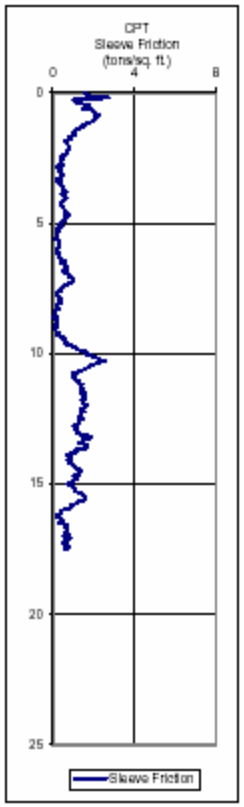
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	8.77		sheen

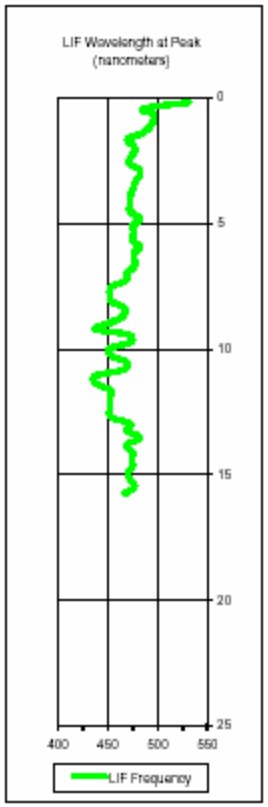
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

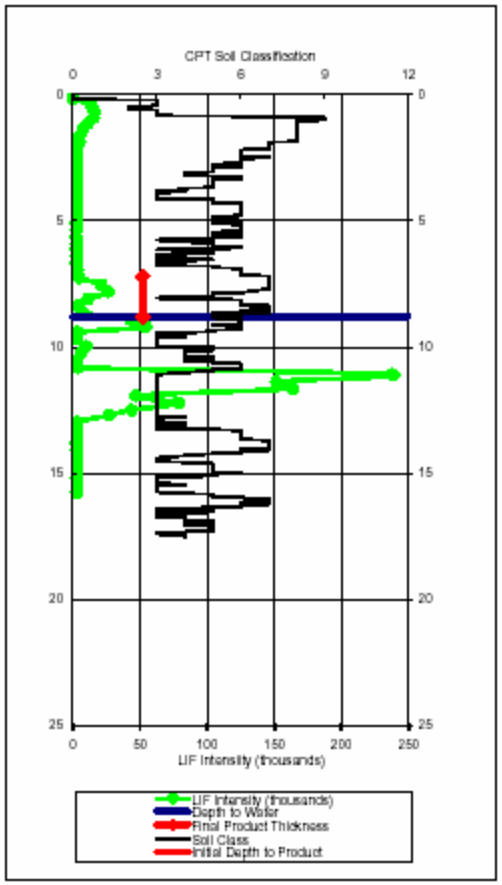
More Product than Expected

Summary Log for FA02-60-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data







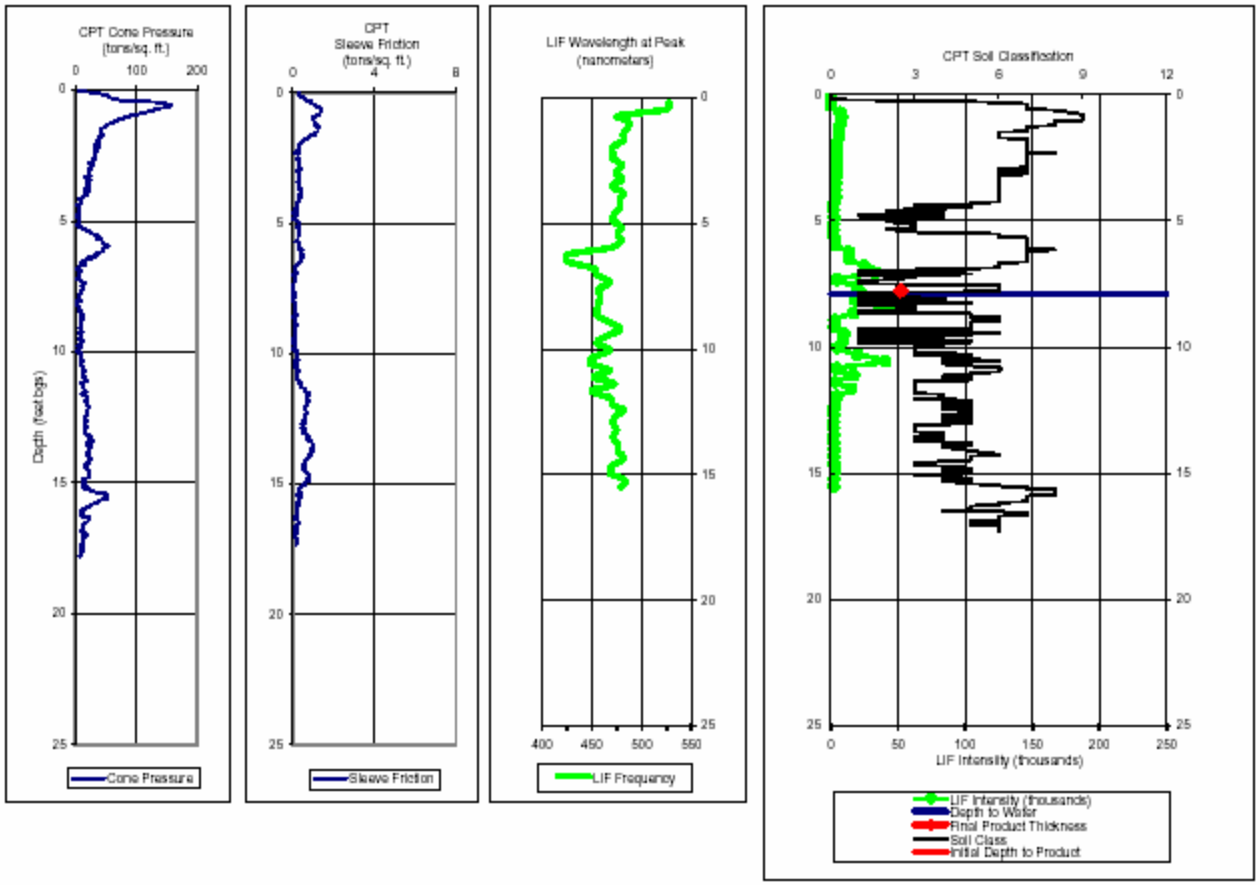


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	8.80		>2.5

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Low Fluorescence, Fine Grained Soil, Small Amount of Product

Summary Log for FA02-08-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

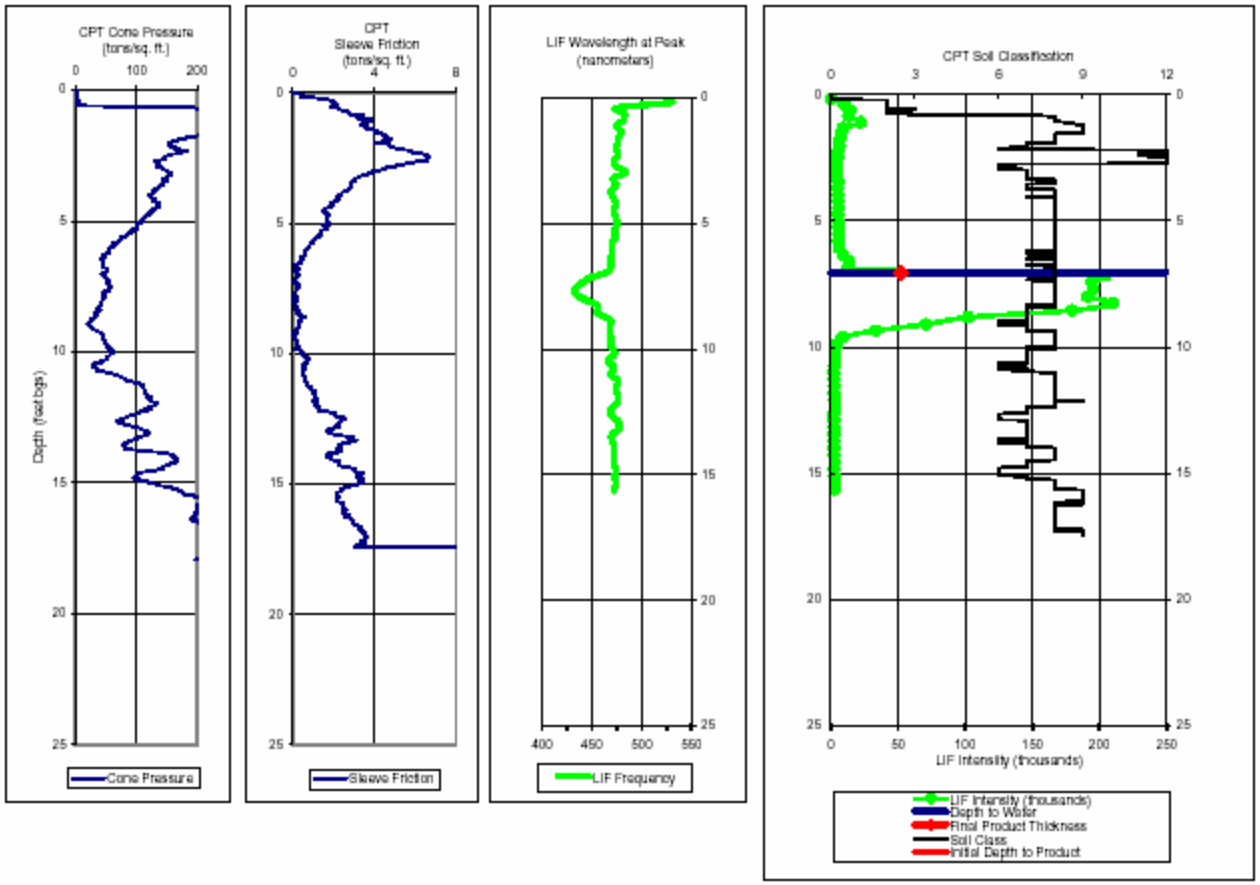


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	7.89	no product	0.01

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Much Less Product than Expected

Summary Log for FA02-67-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data

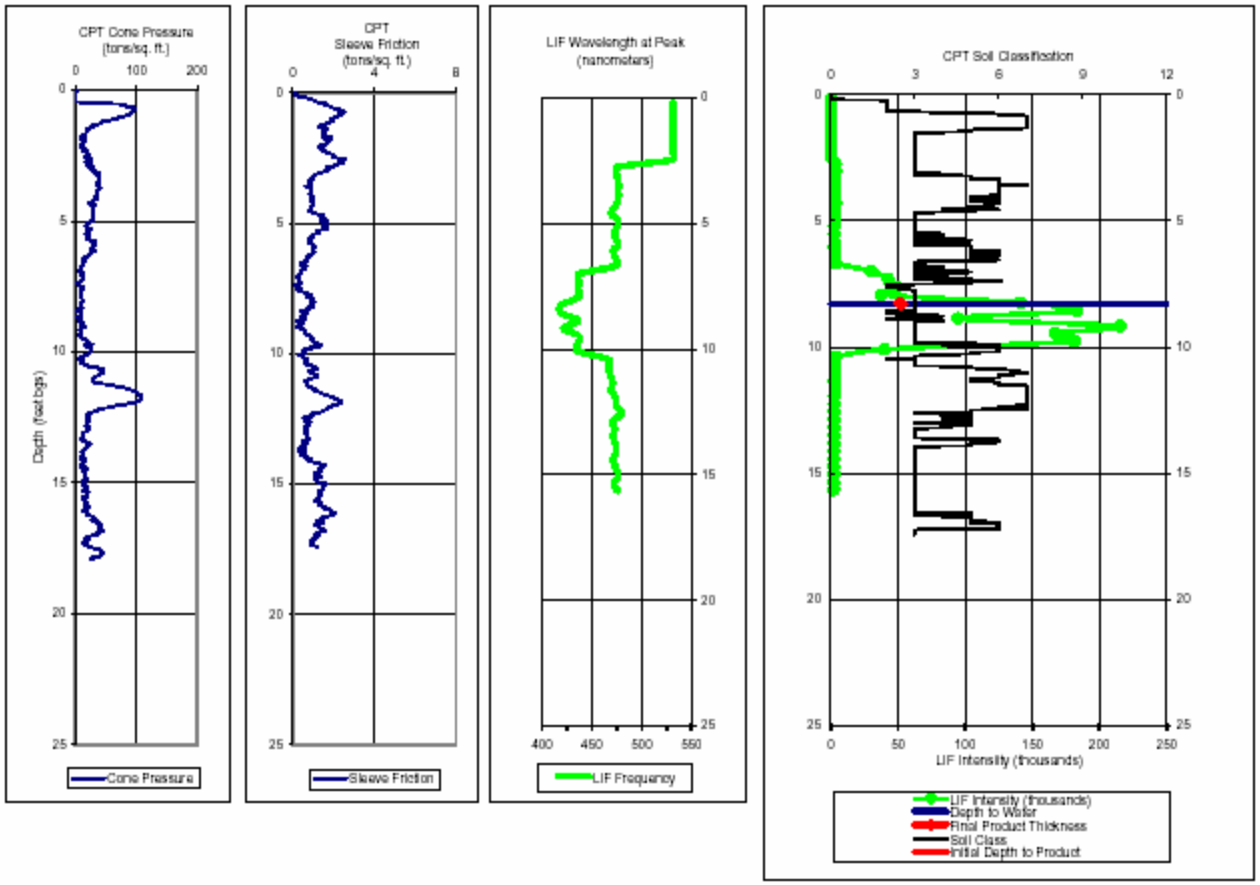


Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-10 (ft bgs)	7.06		sheen

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Much Less Product than Expected

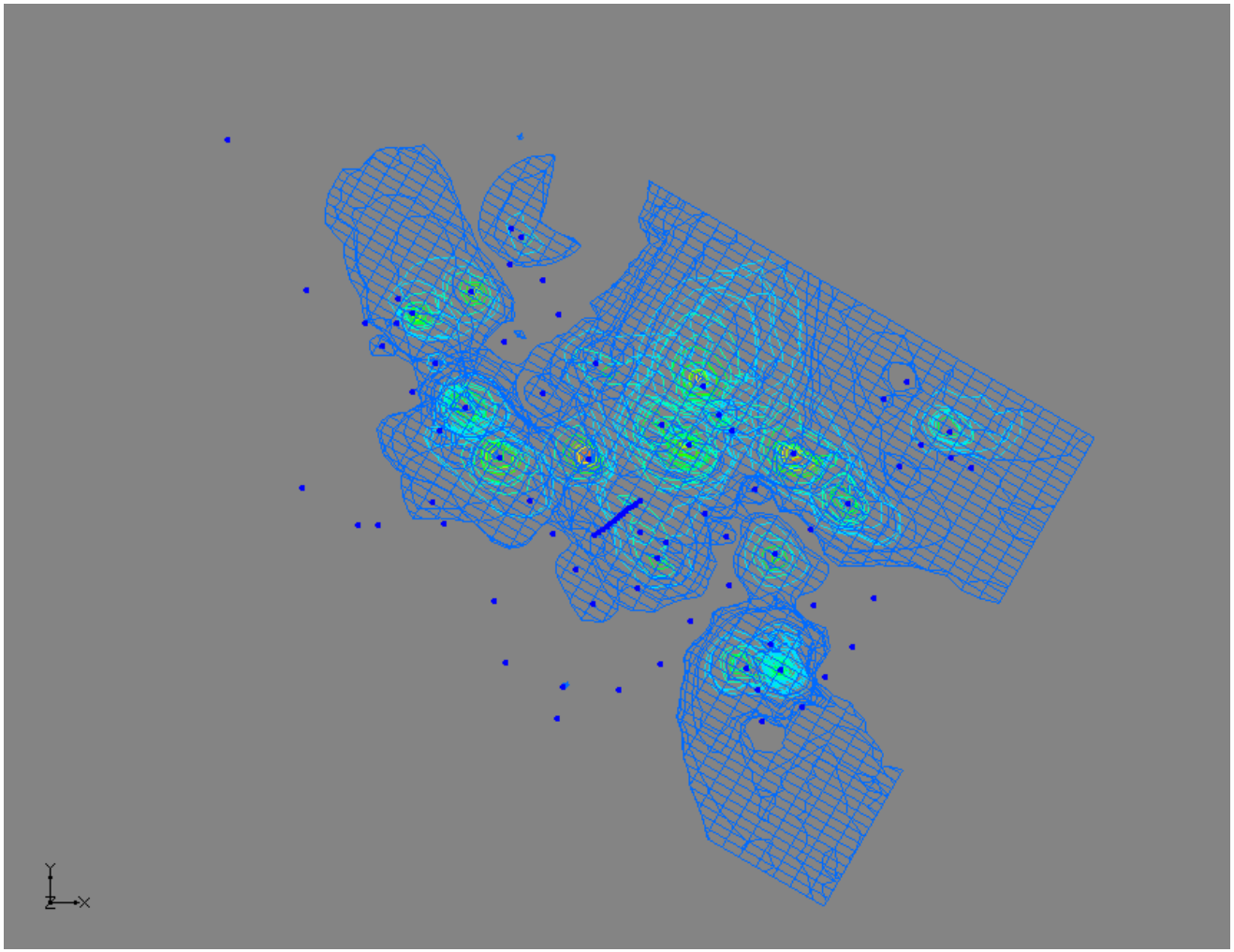
Summary Log for FA02-85-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



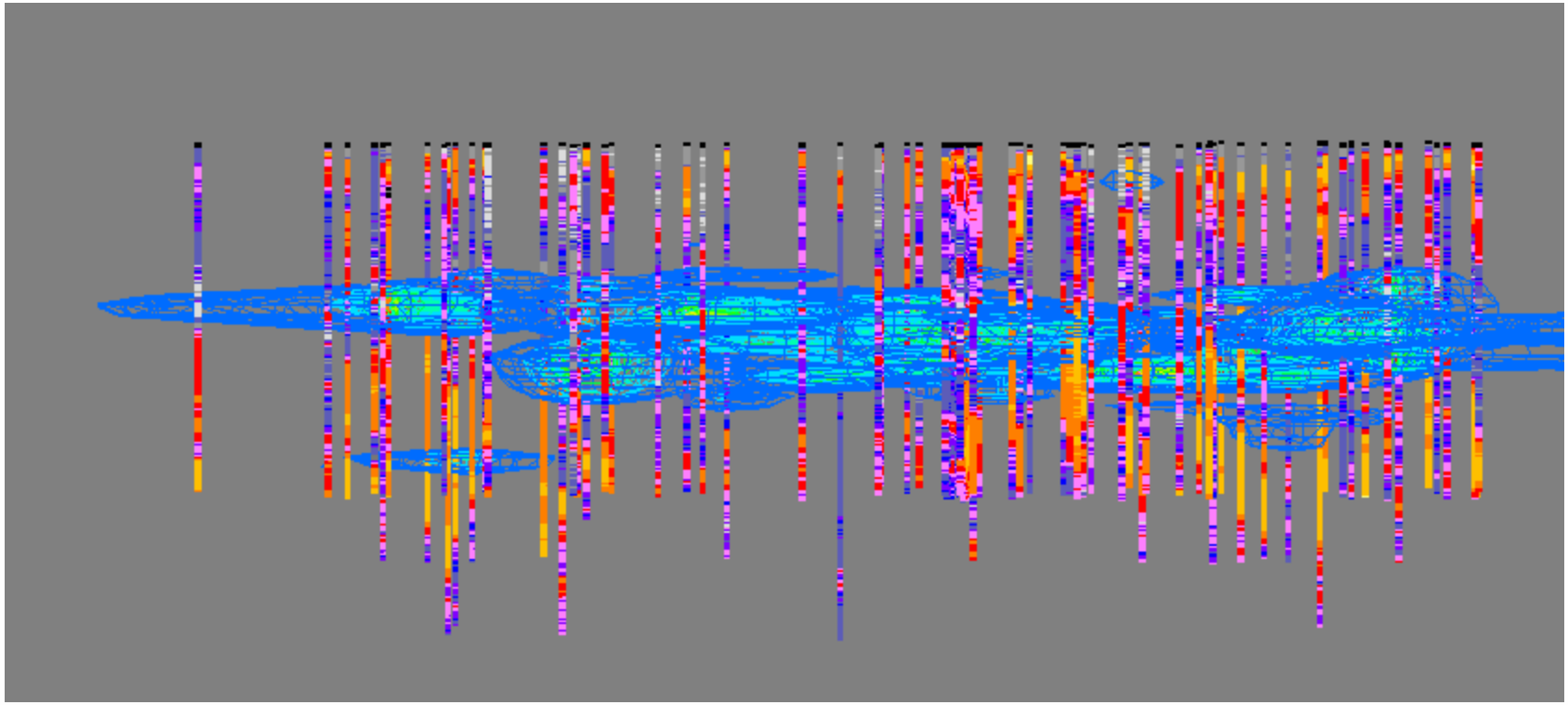
Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
	8.28		sheen

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Site 2



Site 2

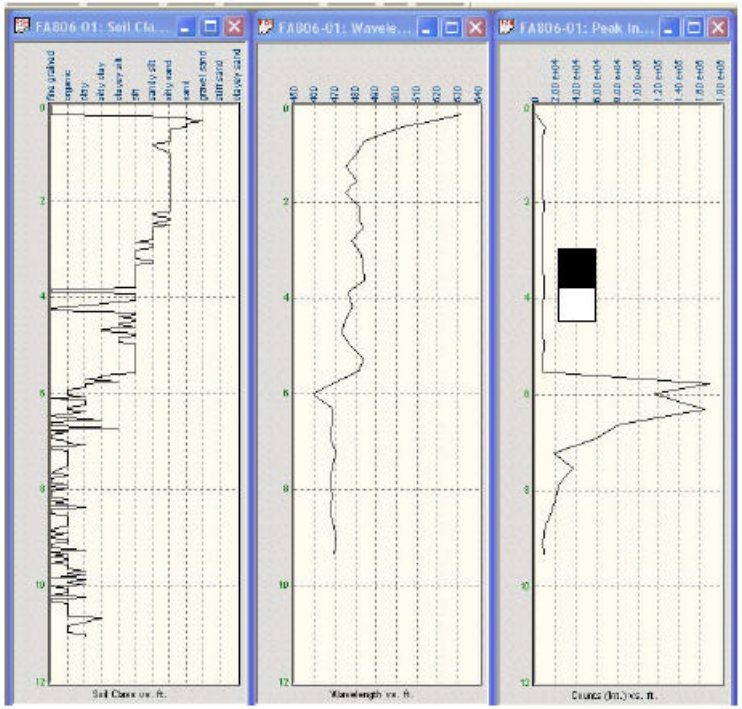


Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 806
Naval Air Station Fallon Nevada

Sample ID: **FA806-01-SS-01**	Sample Date: **2-16-07**	Sampled By: **F. Essig**
Sample Interval: **3.0 to 4.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample was chosen to confirm the background LIF response directly above the contaminated interval.
The CPT log indicates predominantly silt with minor thin finer interbeds throughout the sample interval.

Sample Description -
Silty CLAY (CH), dark brown (7.5YR 3/2), very moist, no stain or odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 97 mg/kg and non detectable for TPHg. These results beneath the LIF detection threshold do correlate with the background LIF response in the sample interval.
The sample description of silty clay is consistent with the CPT log measurement of silt at the analysis point.

Analytical Results (mg/kg)	
TPHd	97
TPHg	ND

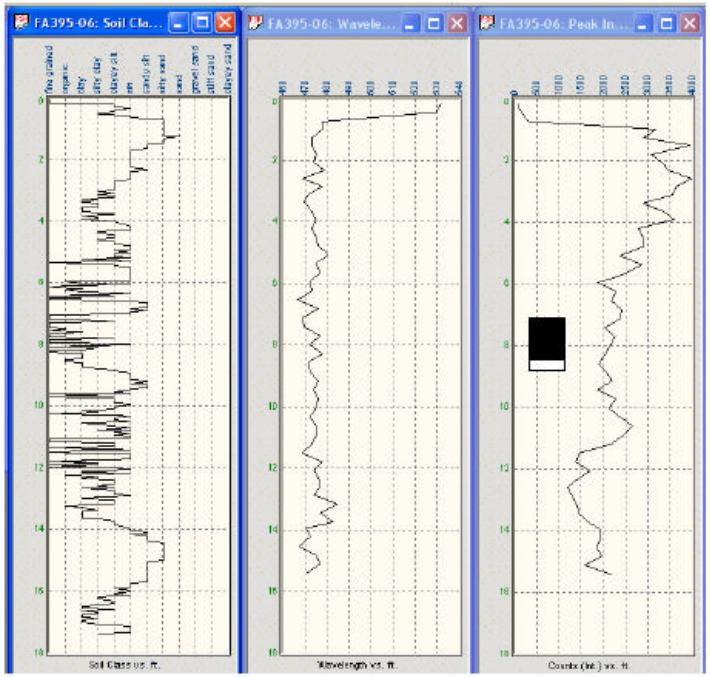
Preliminary Draft
4/24/07

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 395
Naval Air Station Fallon Nevada

Sample ID: **FA395-06-SS-01**	Sample Date: **2-16-07**	Sampled By: **F. Essig**
Sample Interval: **7.2 to 8.7'**	Percent Recovery: **83%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The LIF showed no indication of POL impact in this push. The interval was chosen as representative of adjacent impacted intervals in Site 395.
The CPT log indicates a mix of fine material primarily within the clay range throughout the sample interval.

Sample Description –
SILT (ML), brown (7.5 YR 5/4), wet, no stain or odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd and TPHg were non detect. These results were expected for a background LIF response. The sample description of silt is consistent with the CPT log.

Analytical Results (mg/kg)	
TPHd	ND
TPHg	ND

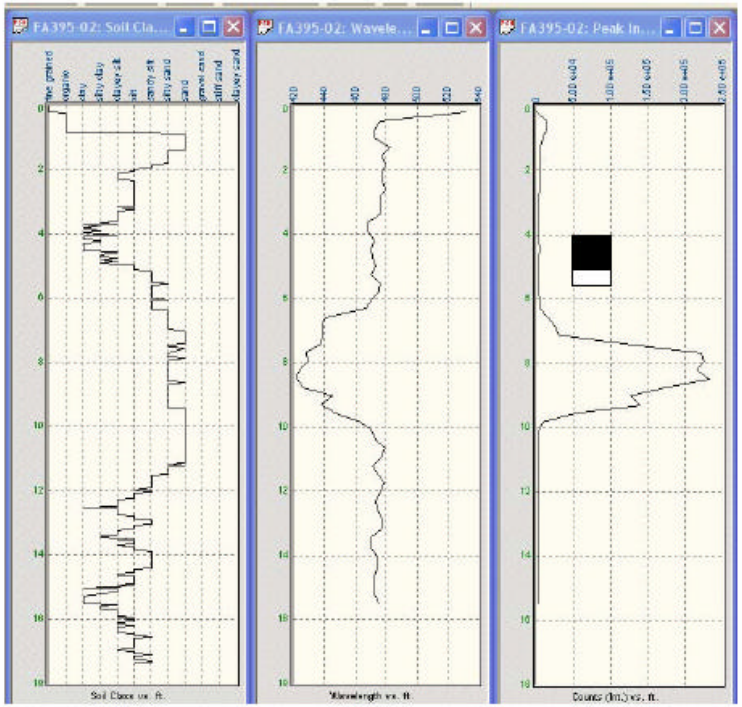
Preliminary Draft
4/24/07

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site395
Naval Air Station Fallon Nevada

Sample ID: **FA395-02-SS-01**	Sample Date: **2-16-07**	Sampled By: **F. Essig**
Sample Interval: **4.0 to 5.5'**	Percent Recovery: **67%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Analytical Results (mg/kg)	
TPHd	ND
TPHg	ND

Description of Data and Sampling Rationale -
The sample was chosen to confirm the background LIF response directly above the contaminated interval.

Sample Description -
SILT from approximately 4.5 to 5.0; dark yellowish brown 10YR 4/4 and SAND (SP) from approximately 5.0 to 5.5 feet bgs, yellowish brown (10YR 5/4), very moist, no stain, no odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for showed no detections for TPHd and TPHg.
These results are expected confirmation for a zone showing no LIF response.
The sample description of sand does not completely agree with the CPT log measurement of clayey silt at the analysis point, however, the rapid change in lithology with depth in the sample zone introduces difficulty matching the CPT data with the sample description.

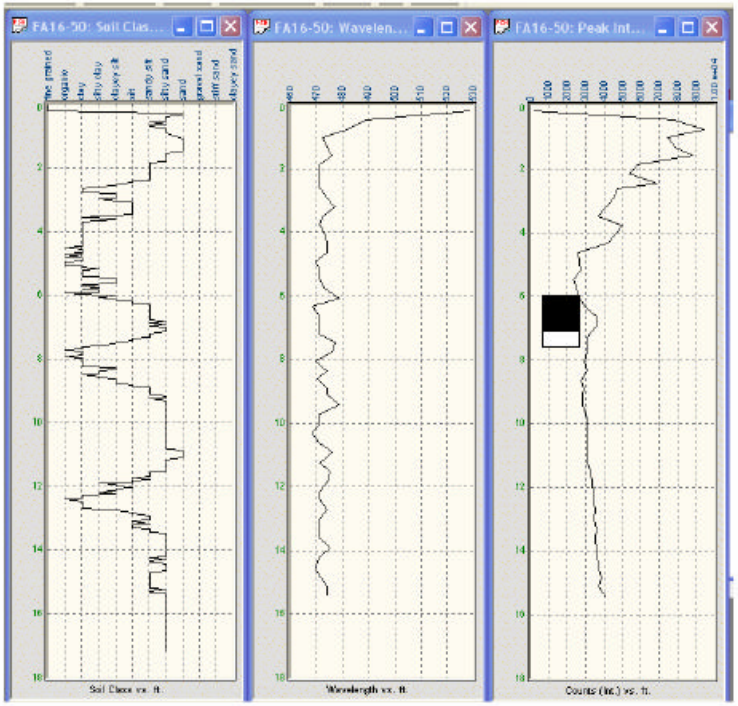
Preliminary Draft
4/24/07

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site16
Naval Air Station Fallon Nevada

Sample ID: **FA16-50-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **6.0 to 7.5'**	Percent Recovery: **67%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The LIF data shows no indication of POL impact in this push. The sample was chosen at a depth where adjacent contaminant impact has been noted to confirm the LIF background response. The CPT log indicates primarily sandy silt throughout the sample interval.

Sample Description -
SILT (ML), light brown (7.5YR 6/3), from approximately 6.0 to 6.5 feet and SAND (SP), grayish brown (10YR 5/2), from approximately 6.5 to 7.0 feet bgs, saturated, no stain or odor.

Discussion of Results -
The sample was tested for TPH as gasoline and diesel. Results were ND for TPHd and 8.6J mg/kg TPHg. The LIF response was background level correlating with the analytical results. The sample lithology as described was slightly coarser (fine sand) than the CPT log for the sample interval (sandy silt).

Analytical Results (mg/kg)	
TPHd	ND
TPHg	8.6J

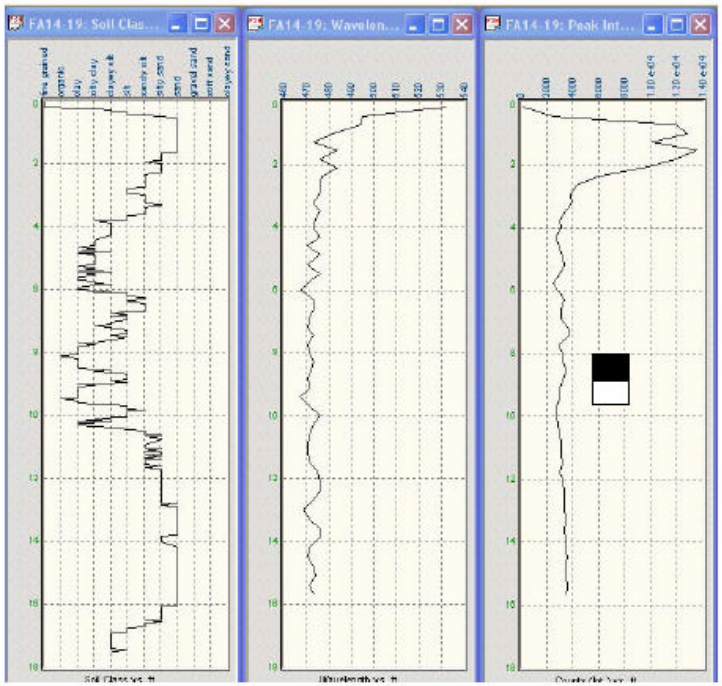
Preliminary Draft
4/24/07

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 14
Naval Air Station Fallon Nevada

Sample ID: **FA14-19-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **8.0 to 9.5'**	Percent Recovery: **83%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The LIF give no indication of POL impact in this push. The sample was chosen to confirm no impact in a fine grained interval at a depth representative of contaminant impact in the area. The CPT log shows clay and sandy silt interbeds in the sample interval.

Sample Description -
SILT (ML), light olive brown (2.5Y 5/4), wet, moderate odor.

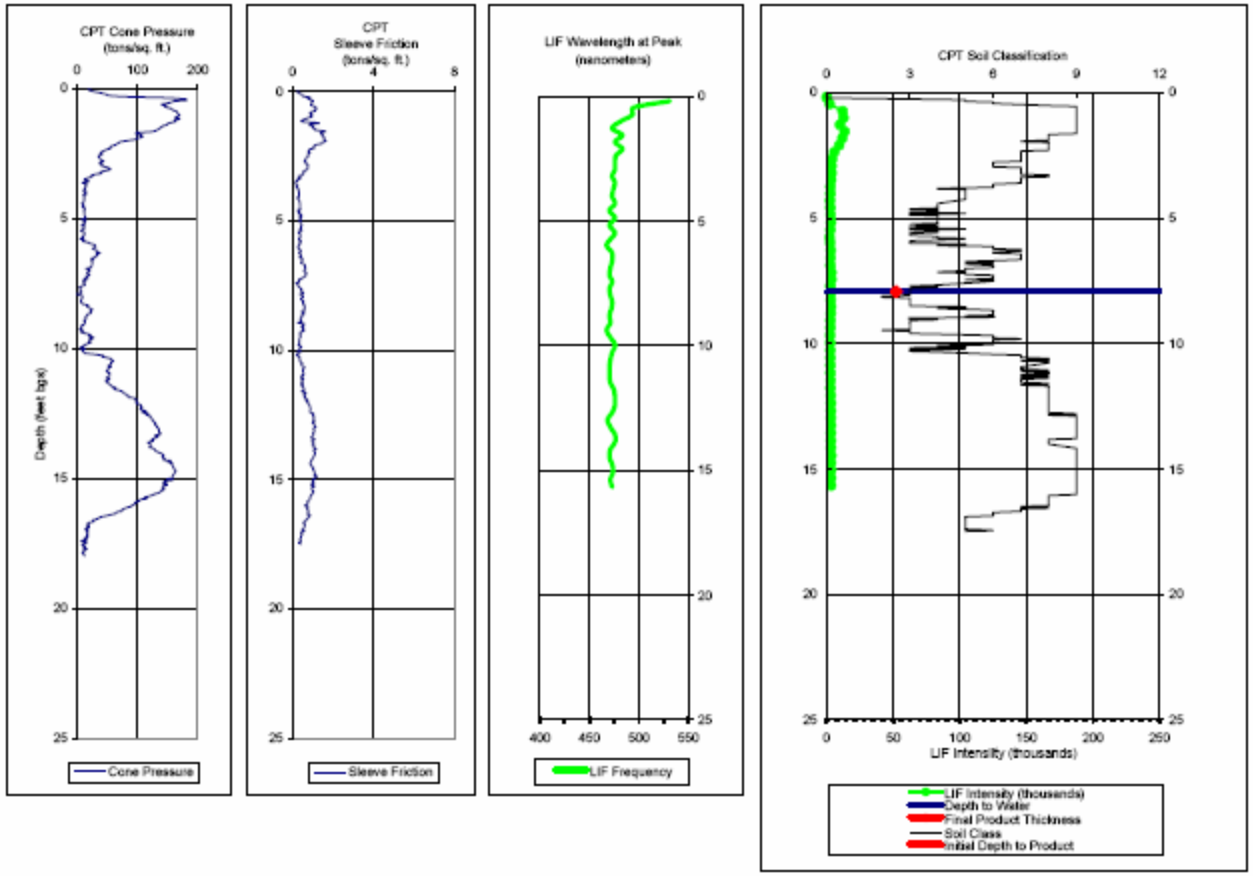
Discussion of Results -
The sample was tested for TPH as diesel and gasoline. The non-detect results for the sample confirms no POL impact as indicated by the LIF data. The sample description of sandy silt is consistent with the CPT log showing silt at the analysis point.

Analytical Results (mg/kg)	
TPHd	ND
TPHg	ND

Preliminary Draft
4/24/07

Background LIF, Sheen in Well

Summary Log for FA14-19-LIF
Naval Air Station Fallon
Site 14
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
4-9 (ft bgs)	7.92		sheen

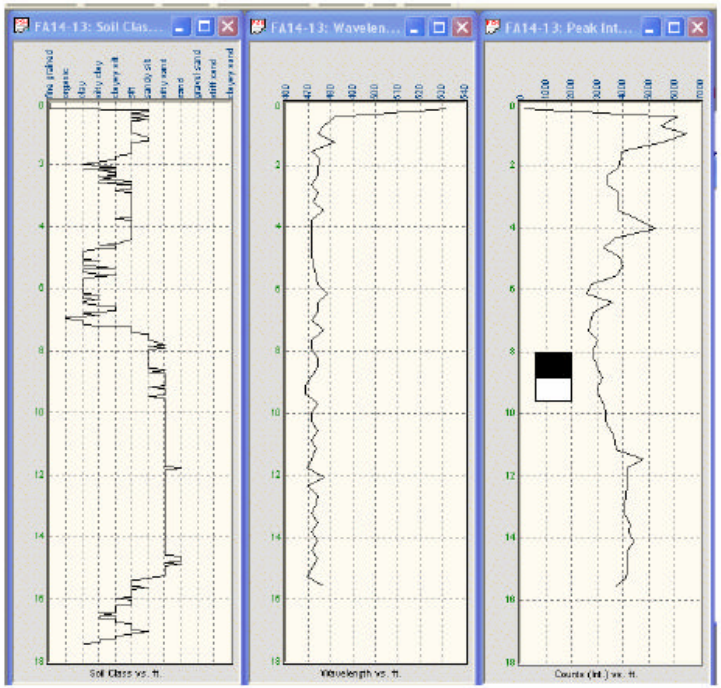
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 14
Naval Air Station Fallon Nevada

Sample ID: **FA14-13-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **8.0 to 9.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The LIF give no indication of POL impact in this push. The sample was chosen to confirm no impact. The CPT log indicates sandy silt at the analysis point.

Sample Description -
Fine SAND (SP) with trace silt, very dark gray (2.5Y 3/1), saturated, faint odor.

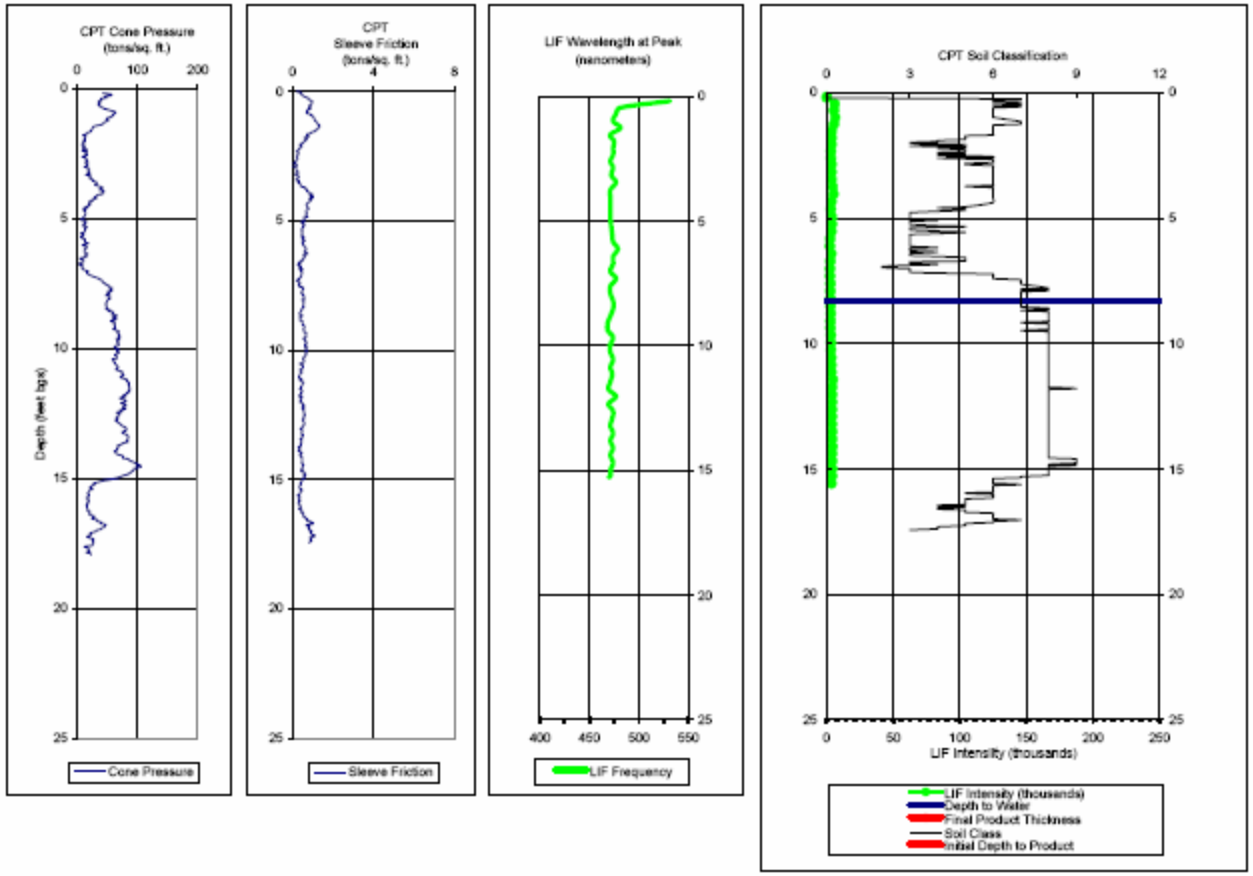
Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 2.5 mg/kg and non detect for TPHg. These results were consistent with the background LIF response.
The CPT recorded sandy silt at the depth of analysis. The sample was described as a fine sand with trace silt

Analytical Results (mg/kg)	
TPHd	2.5
TPHg	ND

Preliminary Draft
4/24/07

Background LIF, No Sheen in Well

Summary Log for FA14-13-LIF
Naval Air Station Fallon
Site 14
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
	8.28		no sheen

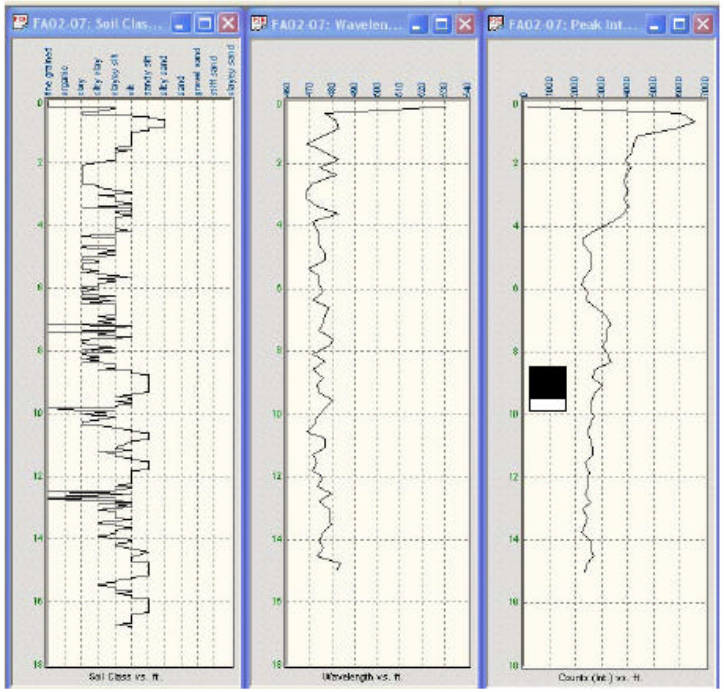
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-07-SS-01**	Sample Date **2/14/07**	Sampled By: **F. Essig**
Sample Interval: **8.4 to 9.9'**	Percent Recovery: **83**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale –
This sample was selected to confirm the background LIF response. The sample depth was within the depth range of contaminant responses noted in other Site 2 pushes.
The CPT data showed predominantly sandy silt throughout the interval.

Sample Description -
Silty SAND (SM), yellowish brown (10YR 5/4), saturated, faint hydrocarbon odor.

Discussion of Results –
The analytical results showed TPHd at 96 mg/kg and the TPHg at 62 mg/kg.
The analytical data is in conformance with the background LIF response data.
The sample description of silty sand essentially matched the CPT data within the sample interval.

Analytical Results (mg/kg)	
TPHd	96
TPHg	62

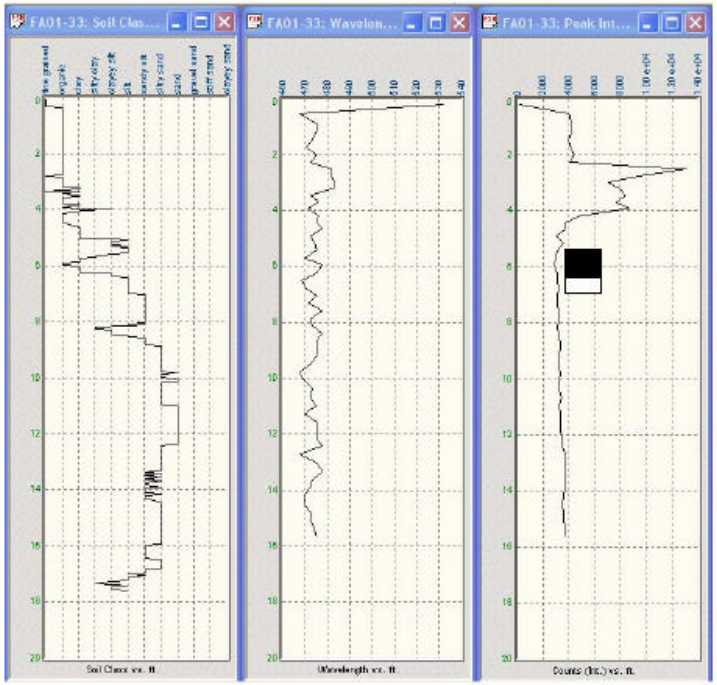
Preliminary Draft
4/24/07

Background LIF, Low Lab Results

SCAPS Soil Sample Log
Site 01
Naval Air Station Fallon Nevada

Sample ID: **FA01-33-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **5.5 to 7.0'**	Percent Recovery: **67%**	

CPT Soil Class Wavelength @ Peak Peak Intensity



Analytical Results (mg/kg)	
TPHd	230
TPHg	120

Description of Data and Sampling Rationale -
This sample was collected from within a zone of background LIF response at 6 feet bgs targeting the depth of the impacted interval observed at Site 1. Because the LIF was pushed down the 5 foot deep hand auger hole, the shallow response was false.
The CPT log within the sample interval shows a fine grained interbed within more massive silt unit

Sample Description -
SILT (ML), grading into lenses of sandy silt, bluish gray (10B 5/1), wet, possible faint odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. The analytical result for TPHd was 230 mg/kg and 120 mg/kg for TPHg. These results were apparently beneath the LIF detection threshold for this matrix.
The sample description of silt grading to lenses of sandy silt is lithologically coarser than the CPT measurement of organic material at analysis depth.

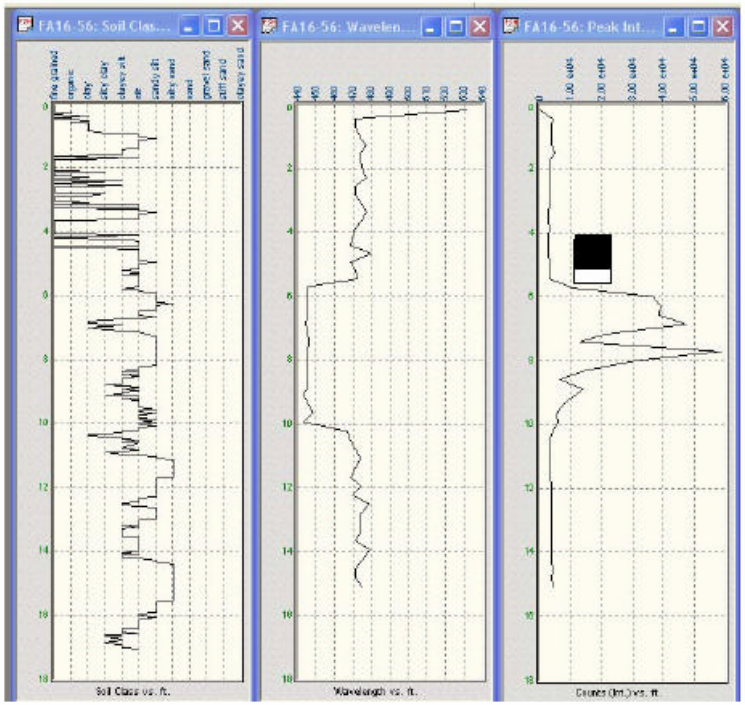
Preliminary Draft
4/24/07

Background LIF, High Lab Results

SCAPS Soil Sample Log
Site 16
Naval Air Station Fallon Nevada

Sample ID: **FA16-56-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **4.0 to 5.5'**	Percent Recovery: **70%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Analytical Results (mg/kg)	
TPHd	22,000
TPHg	370

Description of Data and Sampling Rationale -
This sample was chosen for LIF background response confirmation from within an interval showing no LIF response directly above a zone of elevated fluorescence.
The CPT log indicates primarily silt throughout the sample interval, the analysis point, however, (4.5 feet bgs), was within an overlying zone where the CPT showed atypical fluctuation. This CPT fluctuation was noted at other locations across the base.

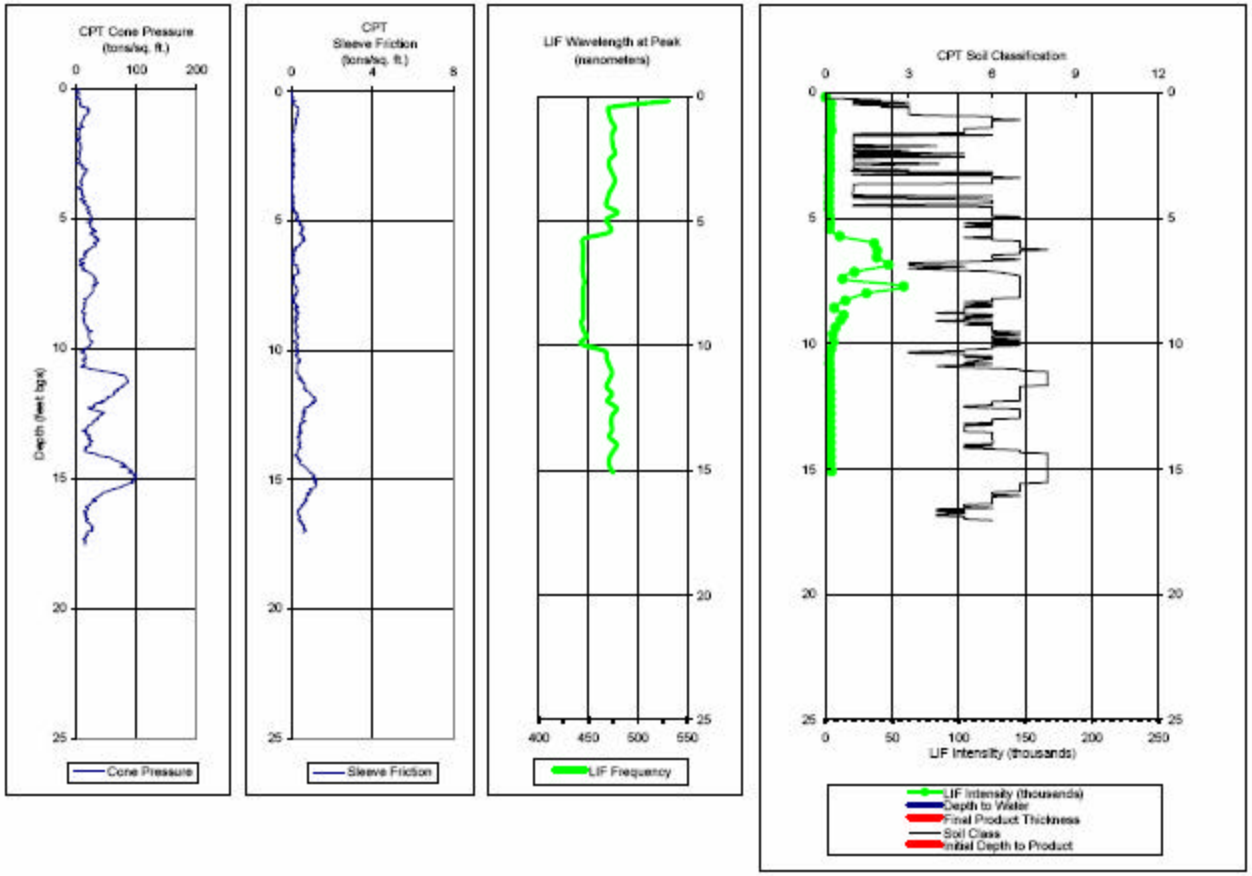
Sample Description -
SILT (ML), grayish brown (10YR 5/2), from approximately 4.0 to 4.7 feet bgs and silty SAND (SM), dark greenish gray, from 4.7 to 5.2, wet to saturated, light odor from approximately 4.0 to 4.7 (silt) moderate odor in the underlying silty sand.

Discussion of Results -
The analytical results were 22,000 mg/kg TPHd and 370 mg/kg TPHg. The LIF response and analytical data do not agree, perhaps due to heterogeneity in the vertical distribution of fuel impact. Also, it is noted that anomalous comparisons between LIF and analytical data are overrepresented in clay and finer intervals The comparison of the sample description against the locally fluctuating CPT log is not conclusive.

Preliminary Draft
4/24/07

No Sheen

Summary Log for FA16-56-LIF
Naval Air Station Fallon
Site 16
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-9 (ft bgs)	0.00		no sheen

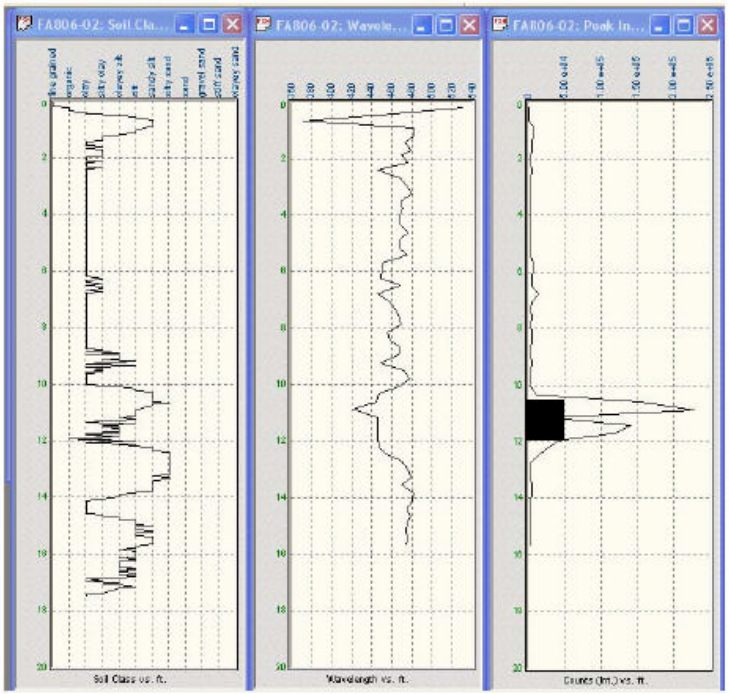
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 806
Naval Air Station Fallon Nevada

Sample ID: **FA806-02-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **10.5 to 12.0'**	Percent Recovery: **100%**	

CPT Soil Class Wavelength @ Peak Peak Intensity



Description of Data and Sampling Rationale -
The LIF response was locally very elevated however mixed and relatively weak at the analysis point (11.0 feet). The sample was chosen from among the few LIF detections measured within Site 806.
The CPT log within the sample interval indicated variable lithology ranging between sandy silt and clay.

Sample Description -
SILT (ML), olive brown (2.5Y 4/3), wet, faint odor

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 69 mg/kg and 21 mg/kg for TPHg. These results were generally consistent with the weak LIF response at the analysis depth
The sample description of silt is equivalent to the CPT log measurement.

Analytical Results (mg/kg)	
TPHd	69
TPHg	21

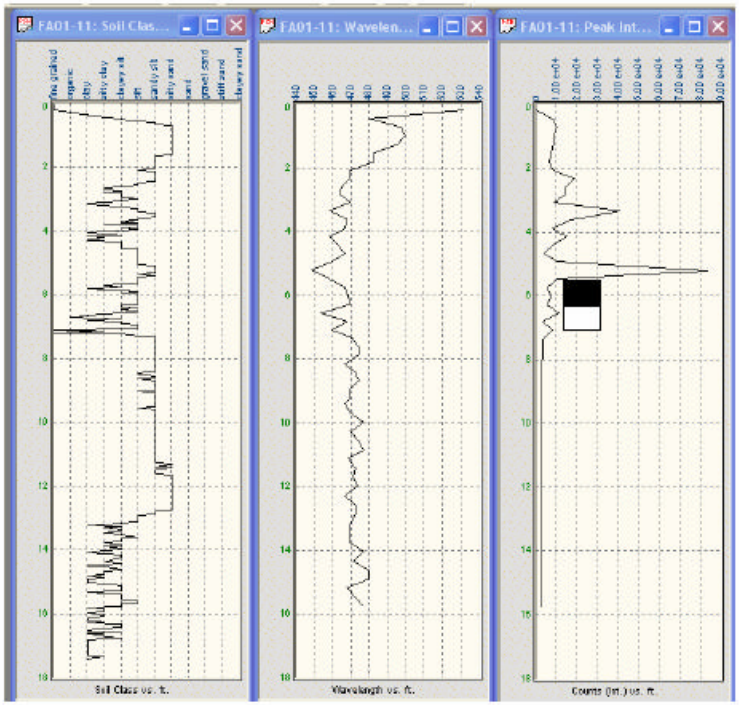
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 01
Naval Air Station Fallon Nevada

Sample ID: **FA01-11-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **5.6 to 7.1'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample targeted an unusually shallow fluorescence response slightly above background intensity that for the most part did not show a wavelength typical of fuel contamination.
The CPT log indicates silt with finer interbeds throughout the sample interval.

Sample Description -
Predominantly sandy SILT (ML), locally grading into silty SAND and to SILT, bluish black (10B 2.5/1), saturated, very dark stain, moderate odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd were 360 mg/kg and 110 mg/kg for TPHg. These results are correlative to the weak LIF contaminant signature. The CPT data showed silt throughout the sample interval. The sample was described as sandy silt in general agreement with the CPT data.

Analytical Results (mg/kg)	
TPHd	360
TPHg	110

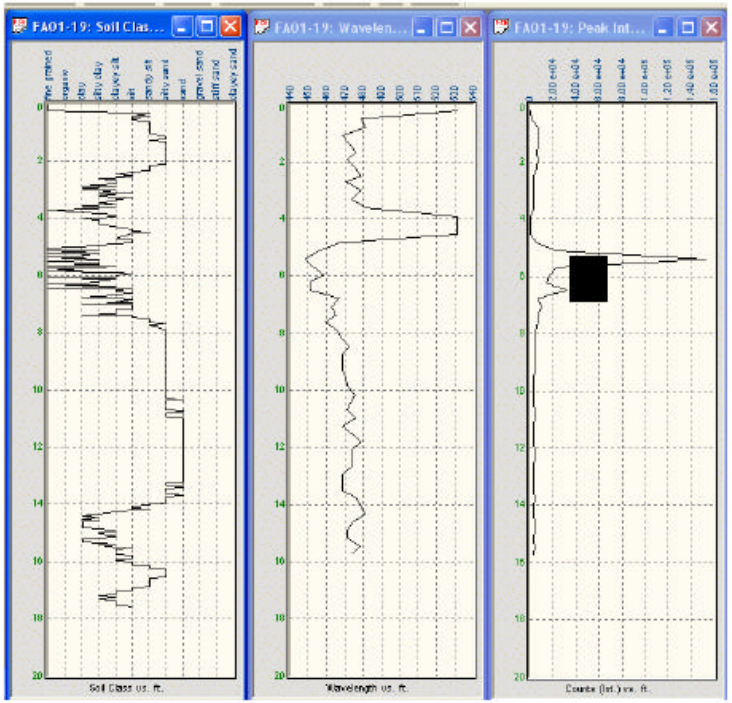
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 01
Naval Air Station Fallon Nevada

Sample ID: **FA01-19-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval:**5.3 to 6.8'**	Percent Recovery: **100%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
This sample was collected from a segment measured by the CPT as an interval of thinly interbedded silty clay and finer material. The sporadic and generally weak LIF response was supported by a corresponding wavelength drop.

Sample Description -
SILT (ML), dark olive brown (2.5Y 3/3), wet, moderate fuel odor, possibly stained.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 640 mg/kg and 96 mg/kg for TPHg. These results were reasonable for the weak and variable LIF hit at the analysis depth The sample was described as a silt without indication of the abundant fine interbeds shown by the CPT.

Analytical Results (mg/kg)	
TPHd	640
TPHg	96

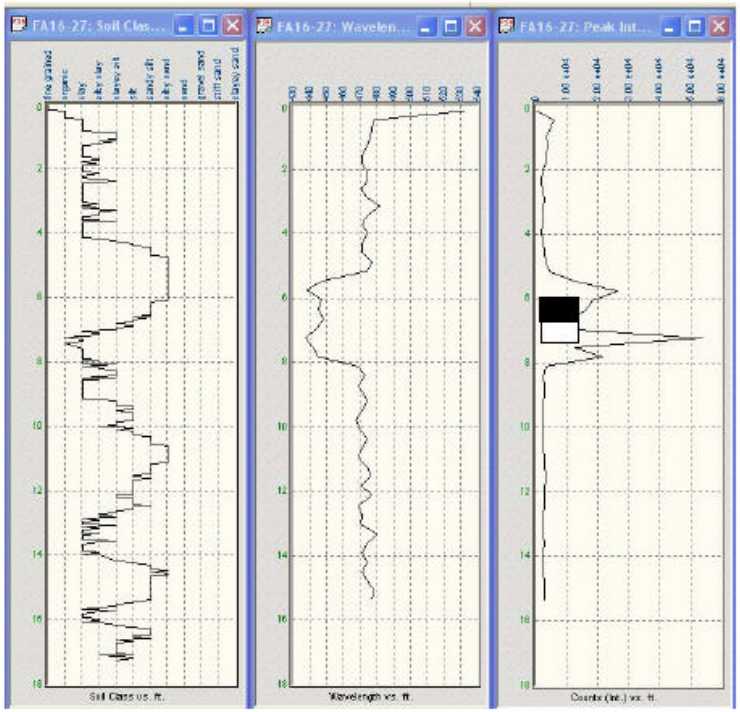
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA16-27-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **6.0 to 7.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The LIF showed a relatively weak response of 16,270 counts at the confirmation analysis depth (6.25 feet bgs). The sharp wavelength attenuation and distinct fluorescence signature are strong support for this relatively low fluorescence POL detection. CPT data at the analysis depth showed sandy silt associated with the base of an approximately two foot thick silty sand lens.

Sample Description -
SILT (ML), light brownish gray (2.5Y 6/2) and dark greenish gray (5GY 5/1), moist to wet, dark greenish gray stain, light to moderate fuel odor.

Discussion of Results -
Analytical results of 690 mg/kg TPHd and 8.4 mg/kg TPHg are reasonable for the associated LIF response.
The sandy silt measured by the CPT was consistent with the silt logged in hand specimen particularly in view of the abrupt fining with depth at the sample location point.

Analytical Results (mg/kg)	
TPHd	690
TPHg	8.4

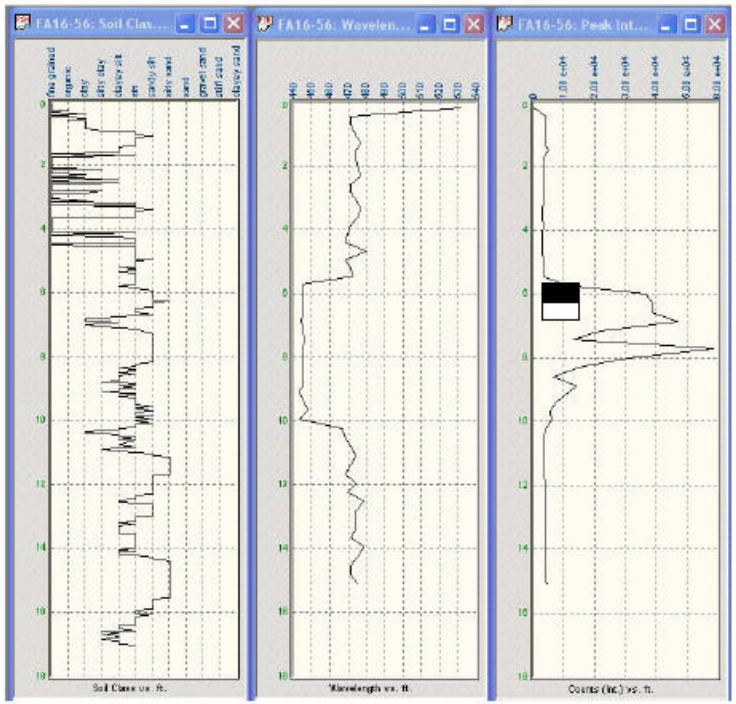
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 16
Naval Air Station Fallon Nevada

Sample ID: **FA16-56-SS-02**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **5.6 to 6.7'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
Sample was selected as representative of a fine grained interval within a zone of moderate LIF fluorescence.
CPT data showed silt at the analysis depth.

Sample Description -
Sandy SILT (SM), Dark bluish gray (5B 4/1), saturated, dark stain.

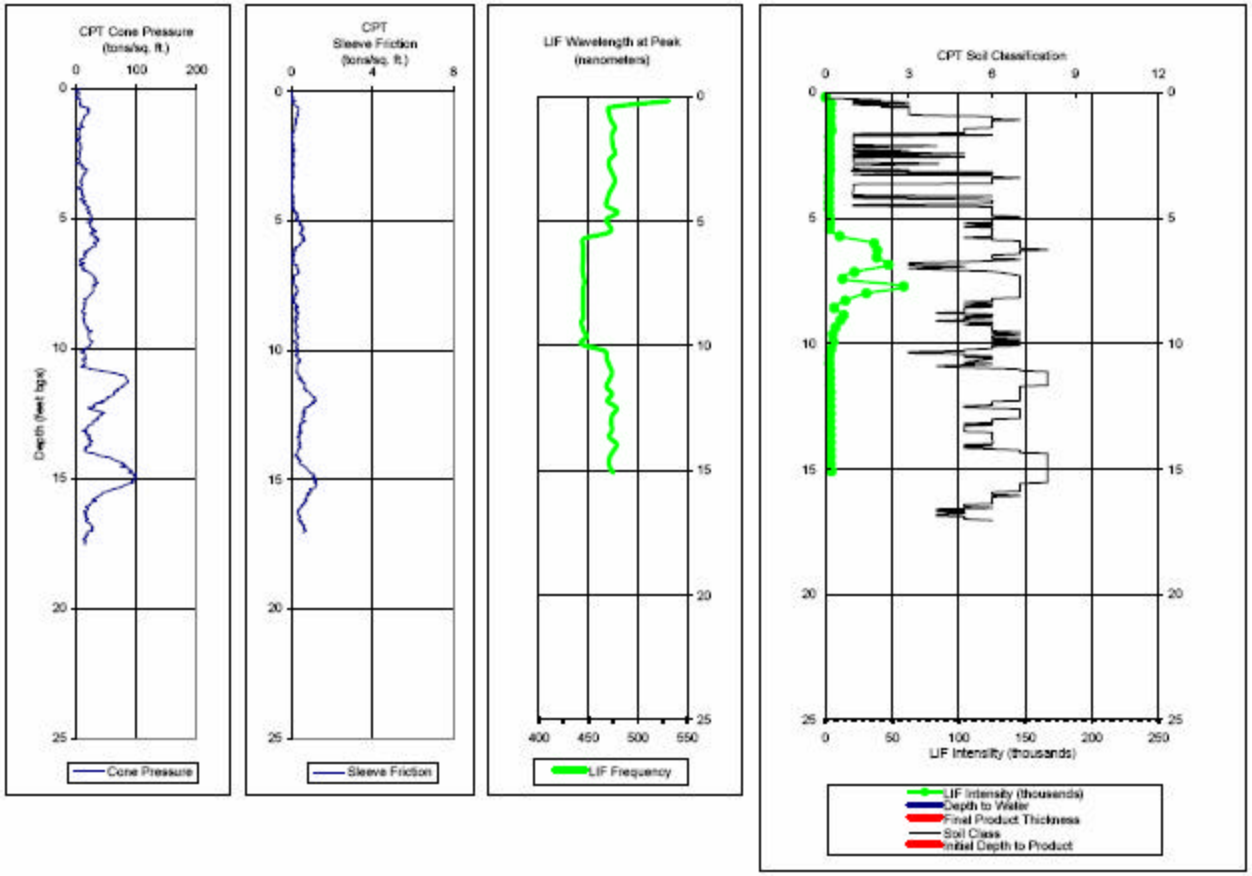
Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 1,200 mg/kg and 45 mg/kg TPHg. These results were reasonable for the moderate LIF response at the sample depth.
CPT was in general agreement with the sample description.

Analytical Results (mg/kg)	
TPHd	1,200
TPHg	45

Preliminary Draft
4/24/07

No Sheen

Summary Log for FA16-56-LIF
Naval Air Station Fallon
Site 16
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
5-9 (ft bgs)	0.00		no sheen

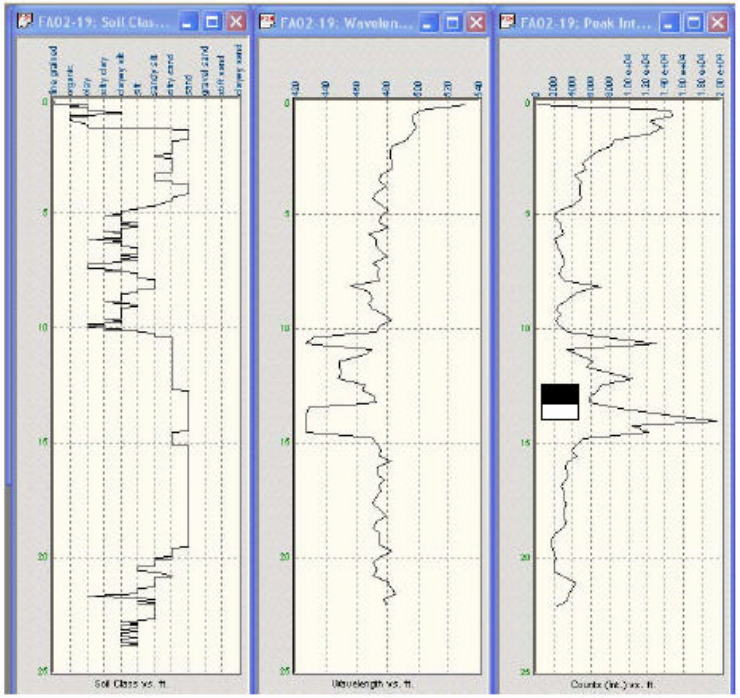
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-19-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **12.6 to 14.1'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale –
The sample was chosen as representative of a moderate LIF response within an extensive sand/silty sand interval.

Sample Description -
Fine to medium with a trace of coarse grain SAND (SW), greenish gray (5GY 6/1), water saturated, with possibly some free product, strong fuel odor, possible gray stain.

Discussion of Results –
The sample was tested for TPH as gasoline and diesel. Results were 2,400 mg/kg TPHd and 190 mg/kg TPHg. The moderate LIF response was consistent with the analytical results. The sample lithology is consistent with the CPT log.

Analytical Results (mg/kg)	
TPHd	2,400
TPHg	190

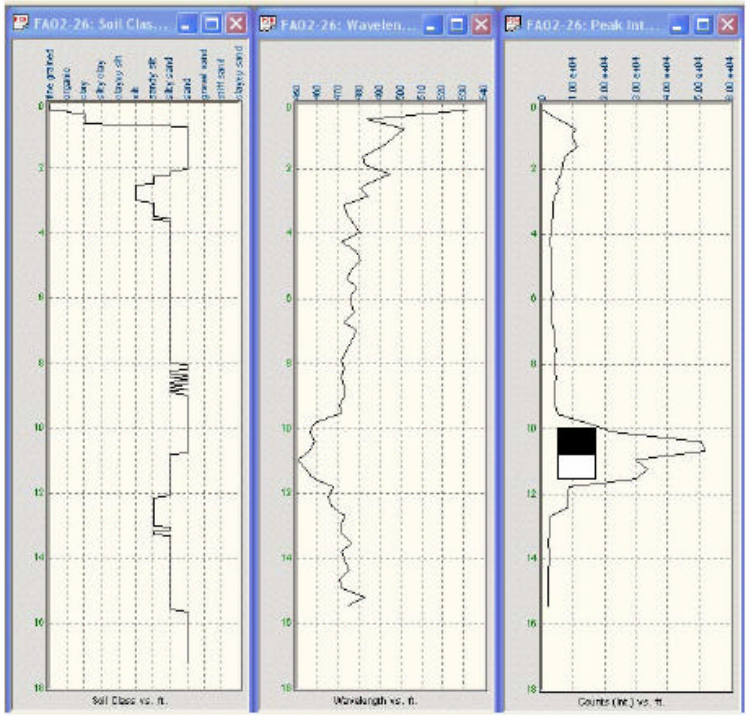
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-26-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **10.0 to 11.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
This sample was taken from within a LIF response showing relatively weak but well defined contaminant impact in terms of fluorescence intensity and wavelength. The CPT log indicates sand/silty sand throughout the sample interval.

Sample Description -
Fine grained SAND (SP) with trace pebbles, dark bluish gray (10B 4/1), saturated, possible dark staining, moderate fuel odor.

Discussion of Results -
The sample was tested for TPH as gasoline and diesel. Results were 4,700 mg/kg TPHd and 230 mg/kg TPHg. The LIF response was weak; the analytical result was moderate strong. The CPT data was consistent with the sample lithology.

Analytical Results (mg/kg)	
TPHd	4,700
TPHg	230

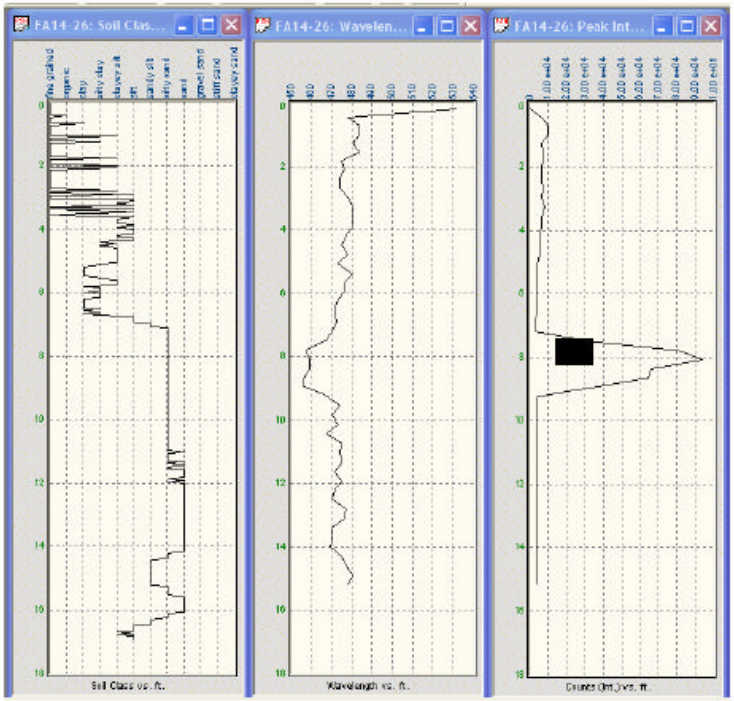
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 14
Naval Air Station Fallon Nevada

Sample ID: **FA14-26-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **7.4 to 7.9'**	Percent Recovery: **150%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample targeted a moderate LIF contaminant signature within a relatively coarse interval.
The CPT log indicates silty sand throughout the sample interval

Sample Description -
SAND (SP), light olive brown (2.5Y 5/4), moist, strong odor.

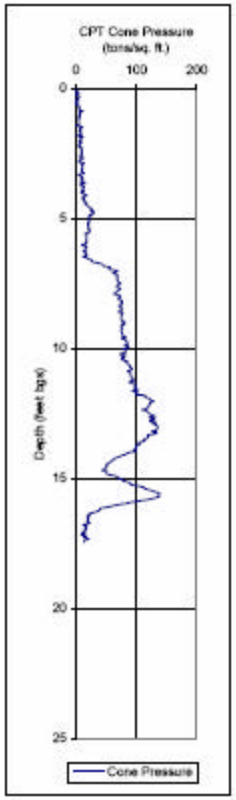
Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 7,700 mg/kg and 26,000 mg/kg for TPHg. These results were reasonable for the moderate LIF hit at the analysis depth.
The CPT data showed silty sand throughout the sample interval. The sample was described as sand in general agreement with the CPT data.

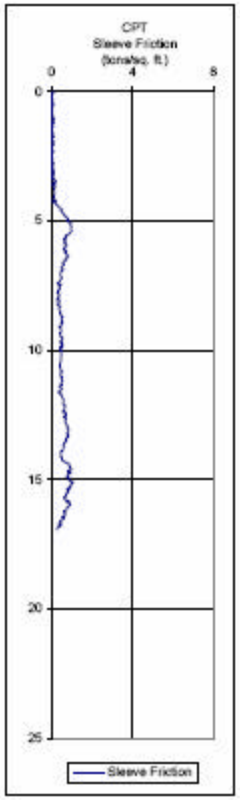
Analytical Results (mg/kg)	
TPHd	7,700
TPHg	26,000

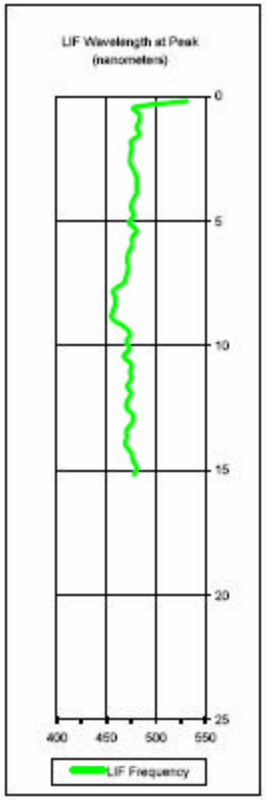
Preliminary Draft
4/24/07

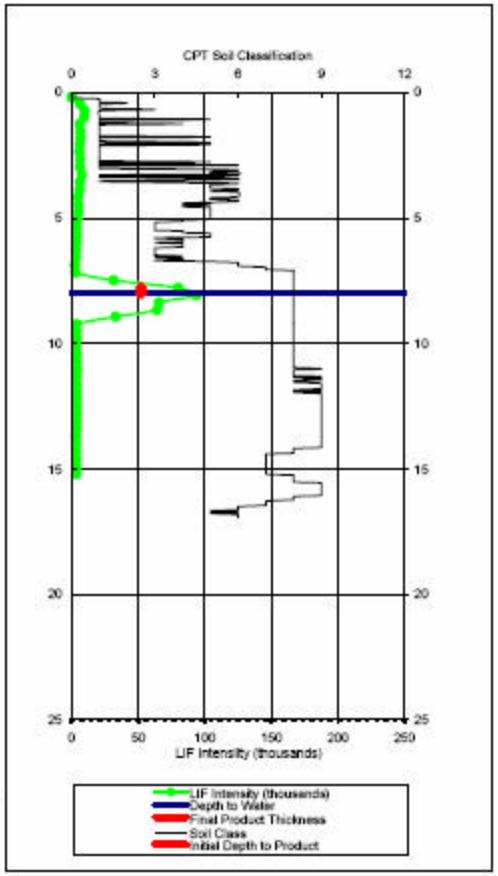
0.21 ft. Product

Summary Log for FA14-26-LIF
Naval Air Station Fallon
Site 14
Site Characterization and Analysis Penetrometer System (SCAPS) Data









Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
4.7-9.7 (ft bgs)	7.98		0.21

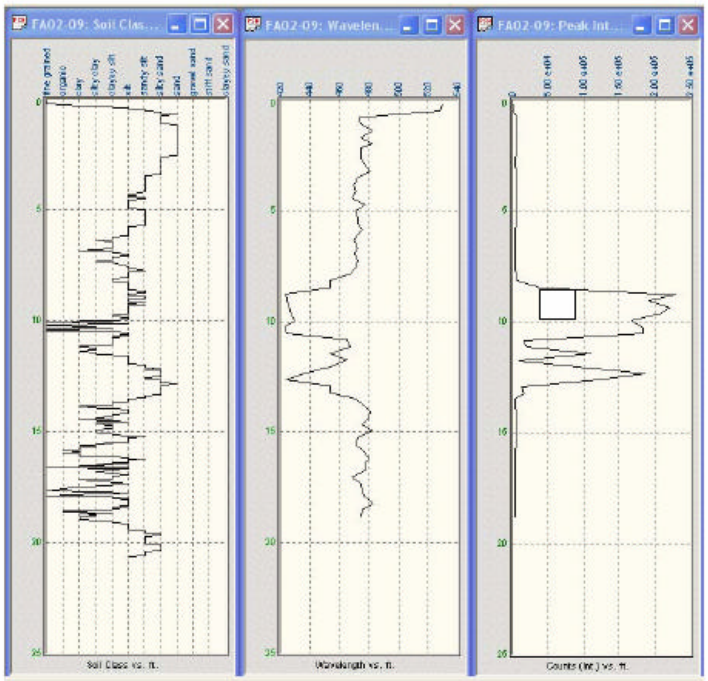
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-09-SS-01**	Sample Date: **2-1-07**	Sampled By: **F. Essig**
Sample Interval: **8.4 to 9.9'**	Percent Recovery: **NA**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale –
The sample was chosen within an elevated LIF response in an interval defined by the CPT as predominantly silt. The LIF response showed a typical indication of a strong POL detection.

Sample Description -
Not available

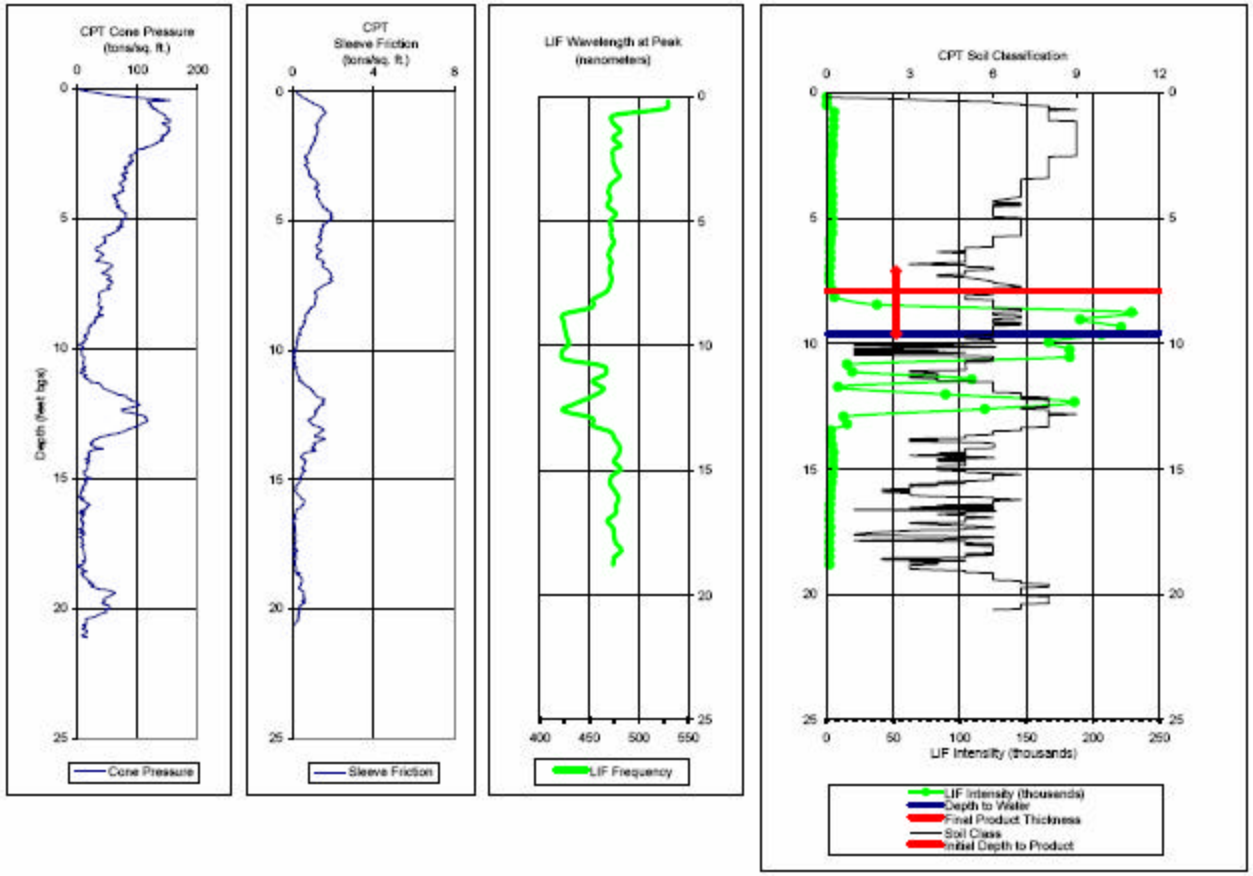
Discussion of Results –
The sample was tested for TPH as gasoline and diesel. Results were 8,300 mg/kg TPHd and 1,900 mg/kg TPHg. The strong LIF response was in general agreement with analytical results.

Analytical Results (mg/kg)	
TPHd	8,300
TPHg	1,900

Preliminary Draft
4/24/07

2.5 ft. Product

Summary Log for FA02-09-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	9.6	7.89	2.5

CPT Soil Classification, Robertson and Campanella, 1988

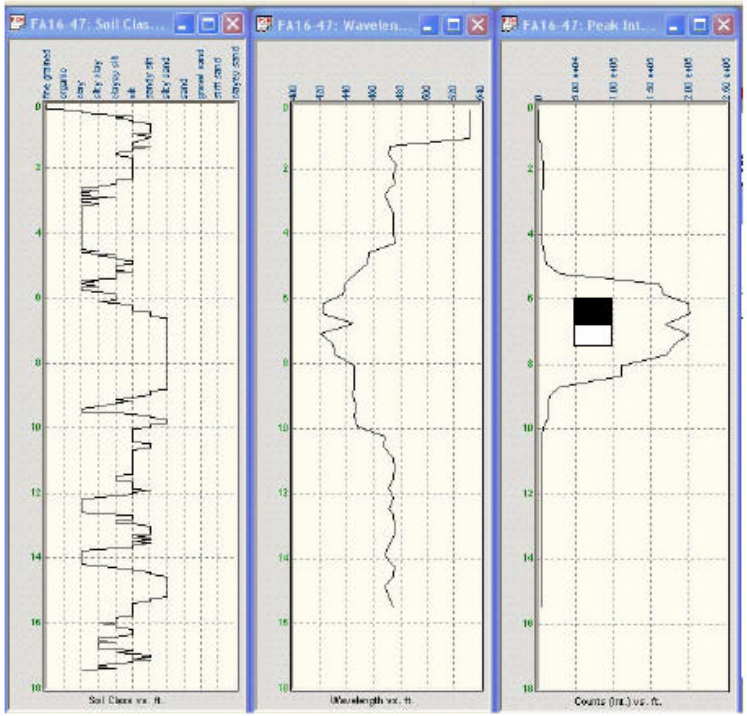
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 16
Naval Air Station Fallon Nevada

Sample ID: **FA16-47-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **6.0 to 7.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale –
The sample was chosen to represent a well defined and vertically extensive LIF response in a relatively coarse grained section. The CPT data show a sample interval at the top of a sandy layer.

Sample Description -
Fine SAND (SP), bluish black (10B2.5/1), saturated with water and yellowish fuel, black stain, strong odor.

Discussion of Results -
The sample was tested for TPH as gasoline and diesel. Results were 34,000 mg/kg TPHd and 70 mg/kg TPHg. These analytical results correlate well with the strong LIF response.
The sample was logged as fine sand compared to the CPT measurement of silty sand.

Analytical Results (mg/kg)	
TPHd	34,000
TPHg	70

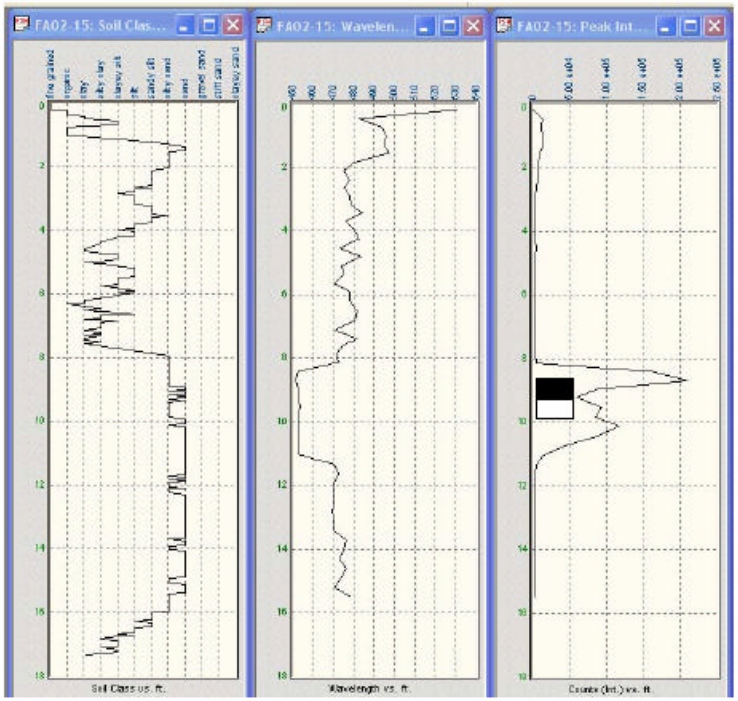
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-15-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **8.4 to 9.9'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample was chosen to represent a moderate LIF response within a sandy interval. The CPT log shows sand to silty sand throughout the sample interval.

Sample Description -
Fine SAND (SP) with trace SILT, gray to dark yellowish brown (10YR 6/1 to 4/6), black stain, saturated.

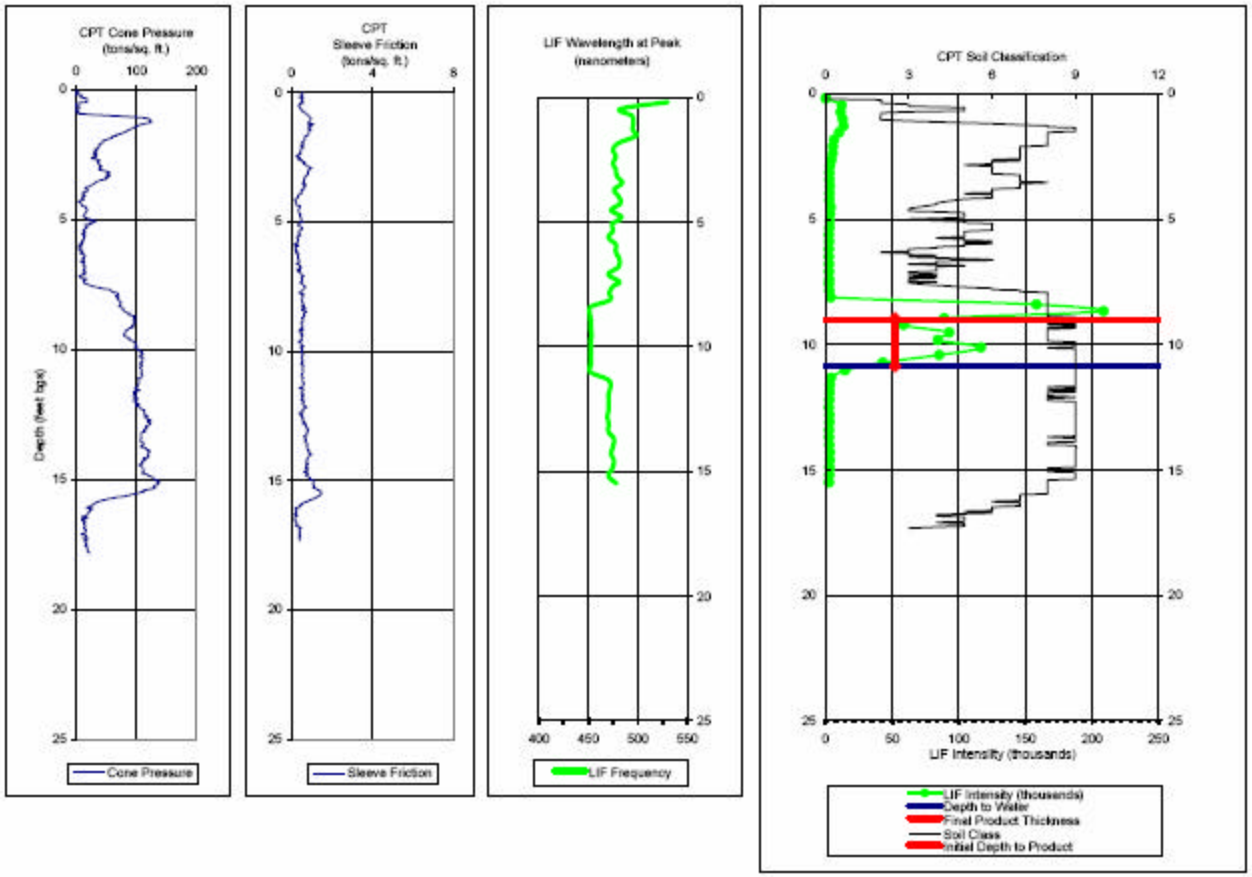
Discussion of Results -
The sample was tested for TPH as diesel and as gasoline. Analytical sample results were 35,000 mg/kg TPHd and 1,200 mg/kg TPHg. The analytical data is strong in comparison with the moderate LIF response from this push. The sample description as sand was consistent with the CPT log.

Analytical Results (mg/kg)	
TPHd	35,000
TPHg	1,200

Preliminary Draft
4/24/07

1.93 ft. Product

Summary Log for FA02-15-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	10.86	8.99	1.93

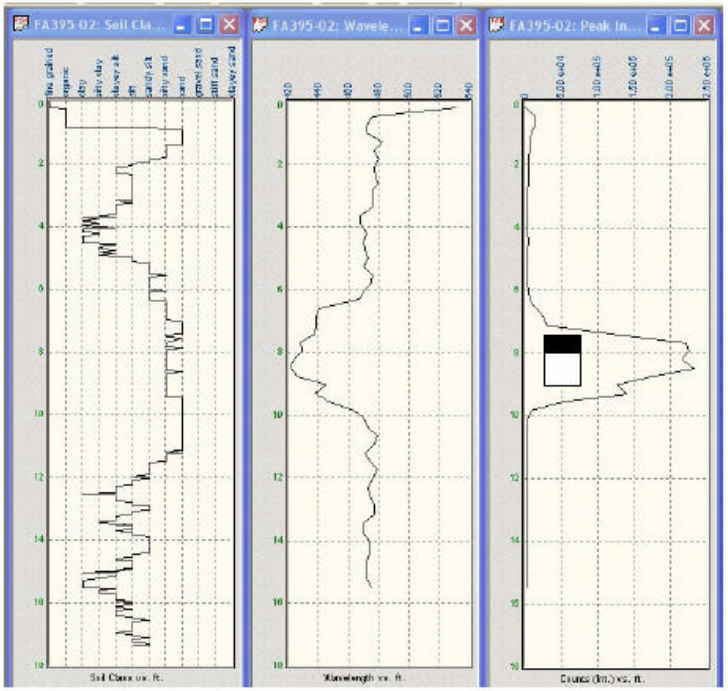
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence Corroborated by Lab Analysis

SCAPS Soil Sample Log
Site 395
Naval Air Station Fallon Nevada

Sample ID: **FA395-02-SS-02**	Sample Date: **2-16-07**	Sampled By: **F. Essig**
Sample Interval: **7.5 to 9.0'**	Percent Recovery: **33%**	

CPT Soil Class Wavelength @ Peak Peak Intensity



Description of Data and Sampling Rationale -
The sample was selected to represent a very elevated LIF response within a sandy interval. The CPT log indicates sand and silty sand throughout the sample interval.

Sample Description -
Fine SAND (SP), dark bluish gray, saturated, with water and oily material, dark stain, strong odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 37,000 mg/kg and 37 mg/kg for TPHg. These results are reasonable for the strong LIF signature.
The sample description of fine sand is consistent with the CPT log measurement of silty sand at the analysis point

Analytical Results (mg/kg)	
TPHd	37,000
TPHg	37

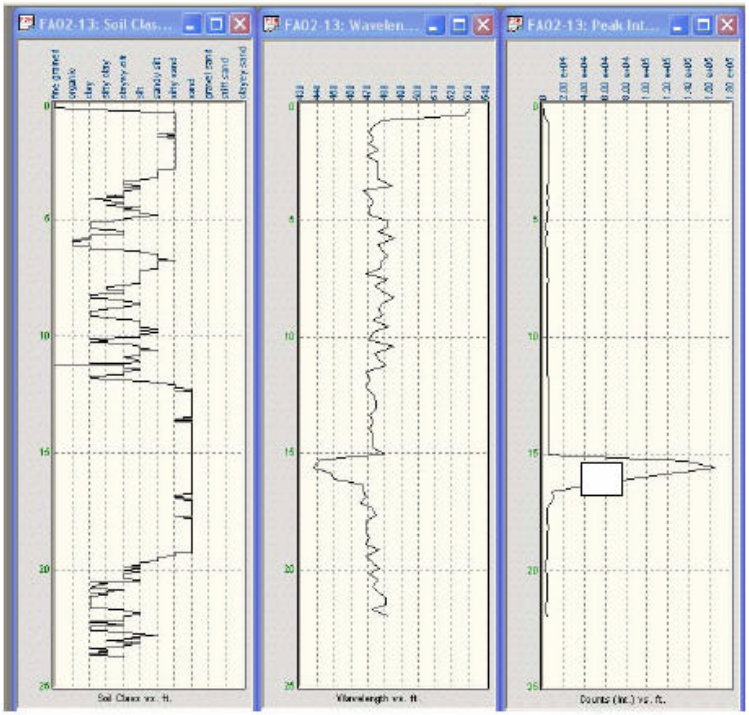
Preliminary Draft
4/24/07

Fuel Fluorescence Corroborated by Observations

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-13-SS-01**	Sample Date **2/14/07**	Sampled By: **F. Essig**
Sample Interval: **15.3 to 16.8'**	Percent Recovery: **trace**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
This sample was taken within a strong LIF response observed within a massive sand below the water table.
This LIF POL-response was significantly deeper than other detections measured during this investigation.
The CPT data showed a massive sand throughout the ample interval.

Sample Description -
Fine to coarse SAND (SW), greenish gray (10yr 5/1), saturated with water and yellowish fuel, strong odor.

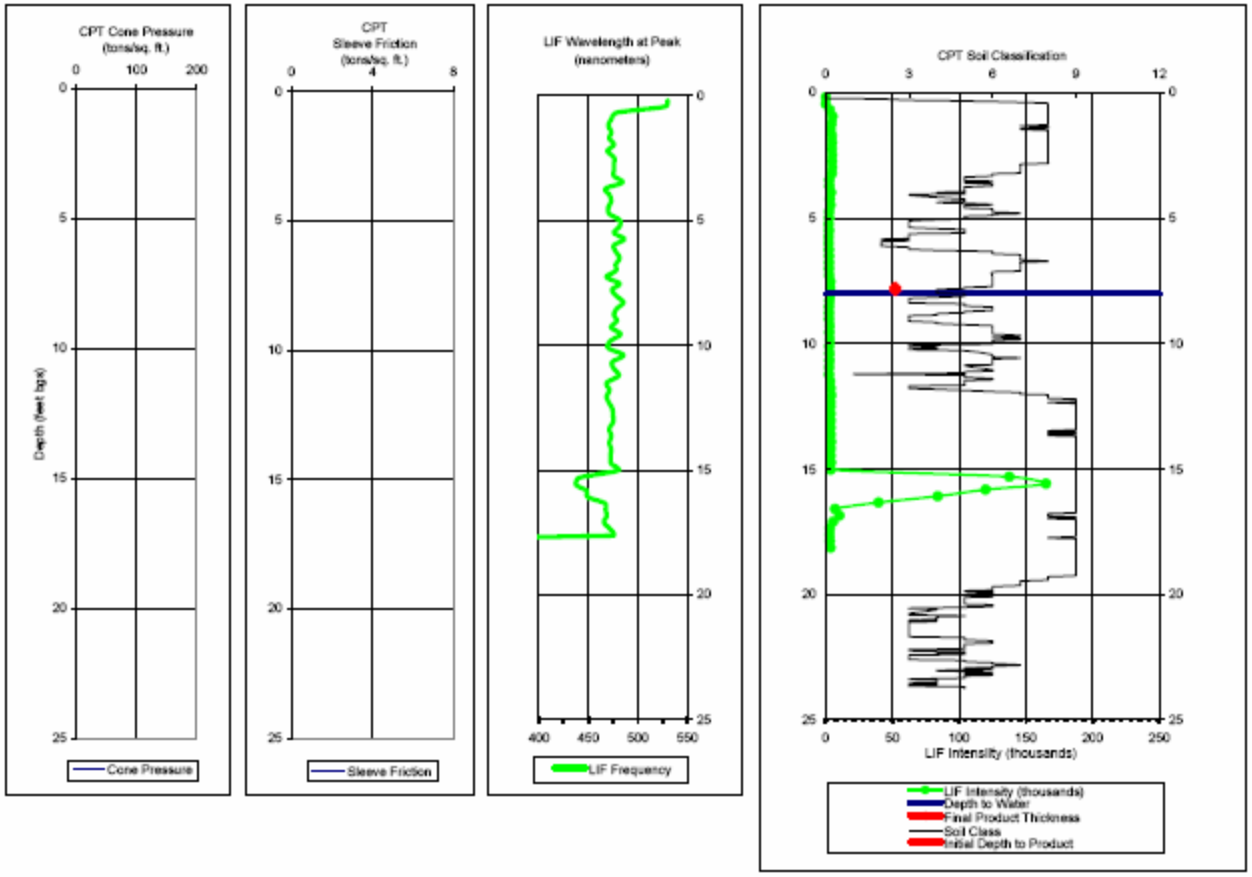
Discussion of Results -
The trace recovery (approximately 10 CC) was composed of a sand, consistent with the CPT data. There was not enough sample for analysis.

Analytical Results (mg/kg)	
TPHd	N/A
TPHg	N/A

Preliminary Draft
4/24/07

0.01 ft. Product Accumulated in Well

Summary Log for FA02-13-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



4-19 (ft bgs)	8.00		0.01

CPT Soil Classification, Robertson and Campanella, 1988

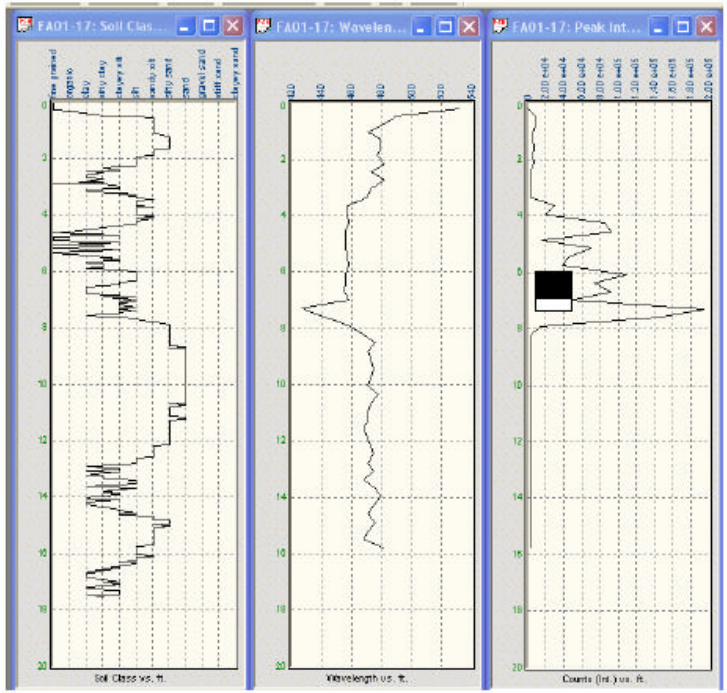
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence, Lab Result Lower Than Expected

SCAPS Soil Sample Log
Site 01
Naval Air Station Fallon Nevada

Sample ID: **FA01-17-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **6.0 to 7.5'**	Percent Recovery: **67%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample was representative of one of the few elevated LIF responses from Site 1. This LIF response shows some variation of intensity with depth.
The CPT log indicates sandy silt to clay throughout the sample interval.

Sample Description -
Predominantly SILT (ML) with sand lenses, bluish gray (10B 5/1) and bluish black (10B 2.5/1), wet, bluish black stain with moderate odor.

Discussion of Results -
The sample was analyzed for TPH as diesel and gasoline. Analytical results for TPHd was 40 mg/kg and 140 mg/kg for TPHg. Analytical results are minimal however not unexpected from the sporadic LIF response.
The sample description of SILT with SAND lenses is coarser than the CPT log showing silty CLAY.

Analytical Results (mg/kg)	
TPHd	40
TPHg	140

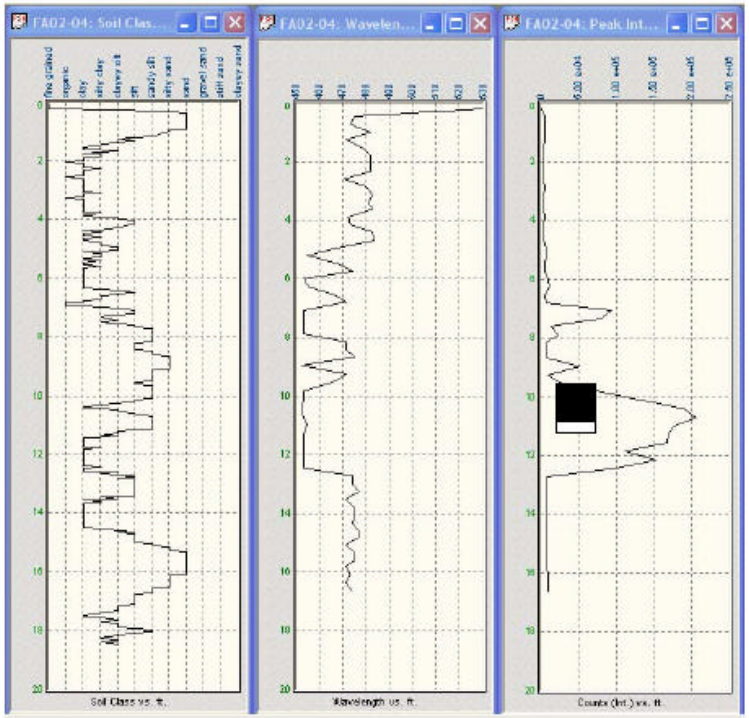
Preliminary Draft
4/24/07

Fuel Fluorescence, Lab Result Lower Than Expected

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-04-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **9.6 to 11.1'**	Percent Recovery: **83%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Analytical Results (mg/kg)	
TPHd	150
TPHg	46

Description of Data and Sampling Rationale -
The sample was chosen within a vertically thick zone of elevated LIF response. The lithology was characterized by interbedded fine and sandier units.
The analysis depth as logged by the CPT was within a clay interval.

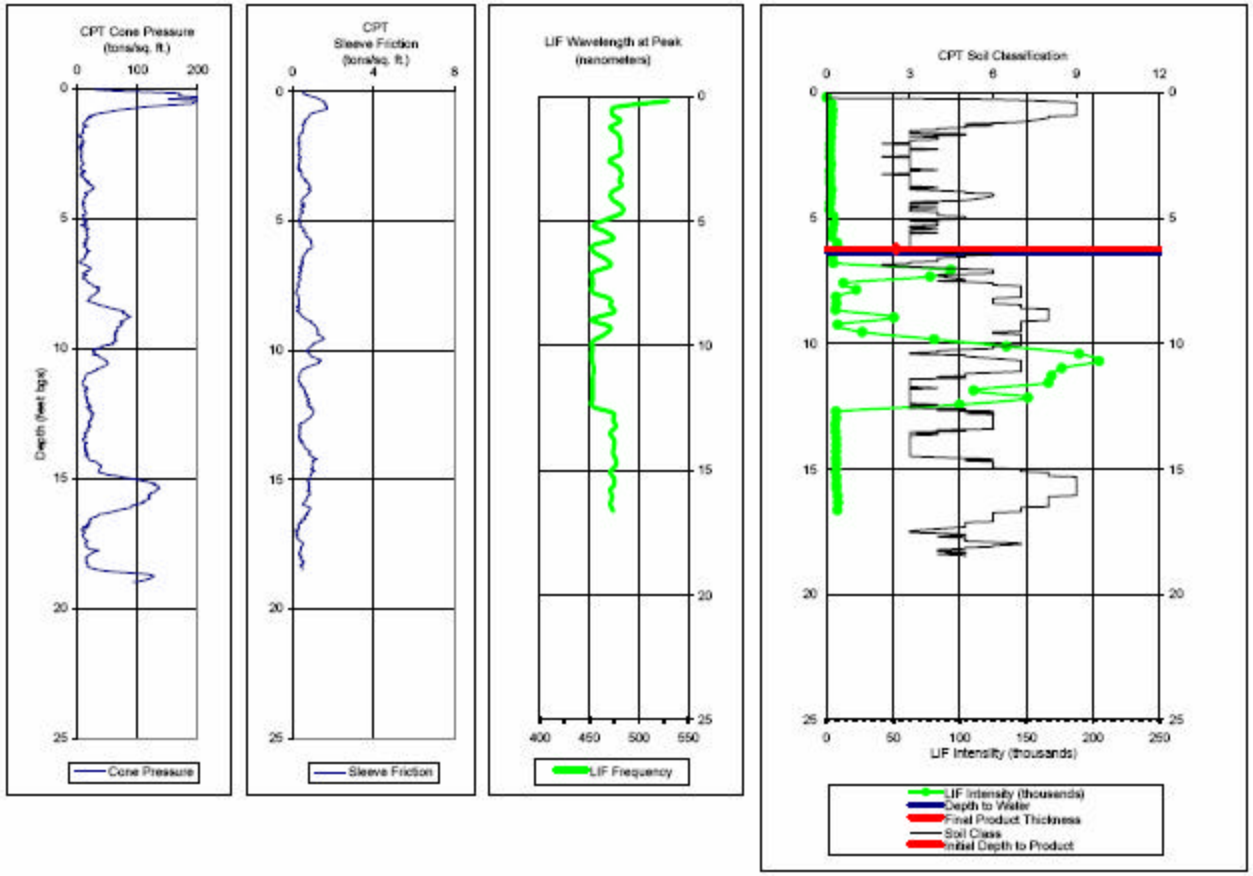
Sample Description -
SILT (ML), brown (10YR 5/3), saturated, moderate fuel odor.

Discussion of Results -
The sample was analyzed for TPH as gasoline and diesel. Results were 150 mg/kg TPHd and 46 mg/kg TPHg. The LIF response was strong, the analytical detection was weak. Poor LIF to analytical correlation in clay zones was observed at other locations. The sample description (silt) is consistent with the CPT log showing clay at the analysis point.

Preliminary Draft
4/24/07

0.01 ft. Product

Summary Log for FA02-04-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
0-10 (ft bgs)	6.34	6.33	0.01

CPT Soil Classification, Robertson and Campanella, 1988

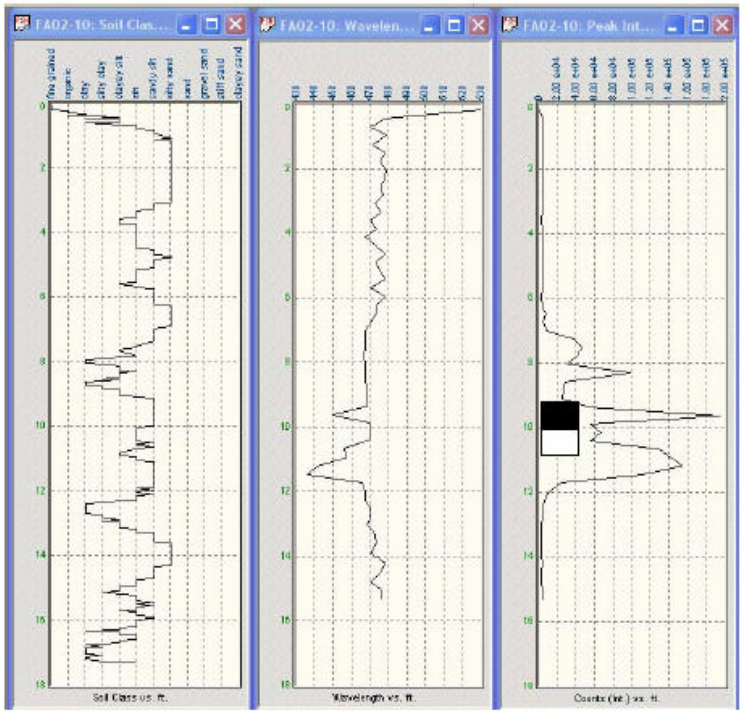
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Fuel Fluorescence, Lab Result Lower Than Expected

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-10-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **9.3 to 10.8'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample was chosen to represent a moderate LIF POL signature within an interval generally representing the mid-range between the clays and sands.
As above, within the sample zone, the CPT log shows intervals primarily within in the sandy silt to clayey silt range.

Sample Description -
SILT (ML) with sandy silt interbeds, reddish gray (2.5YR 6/1) and light brownish gray (2.5 YR 6/2), very moist to wet, gray staining, moderate odor.

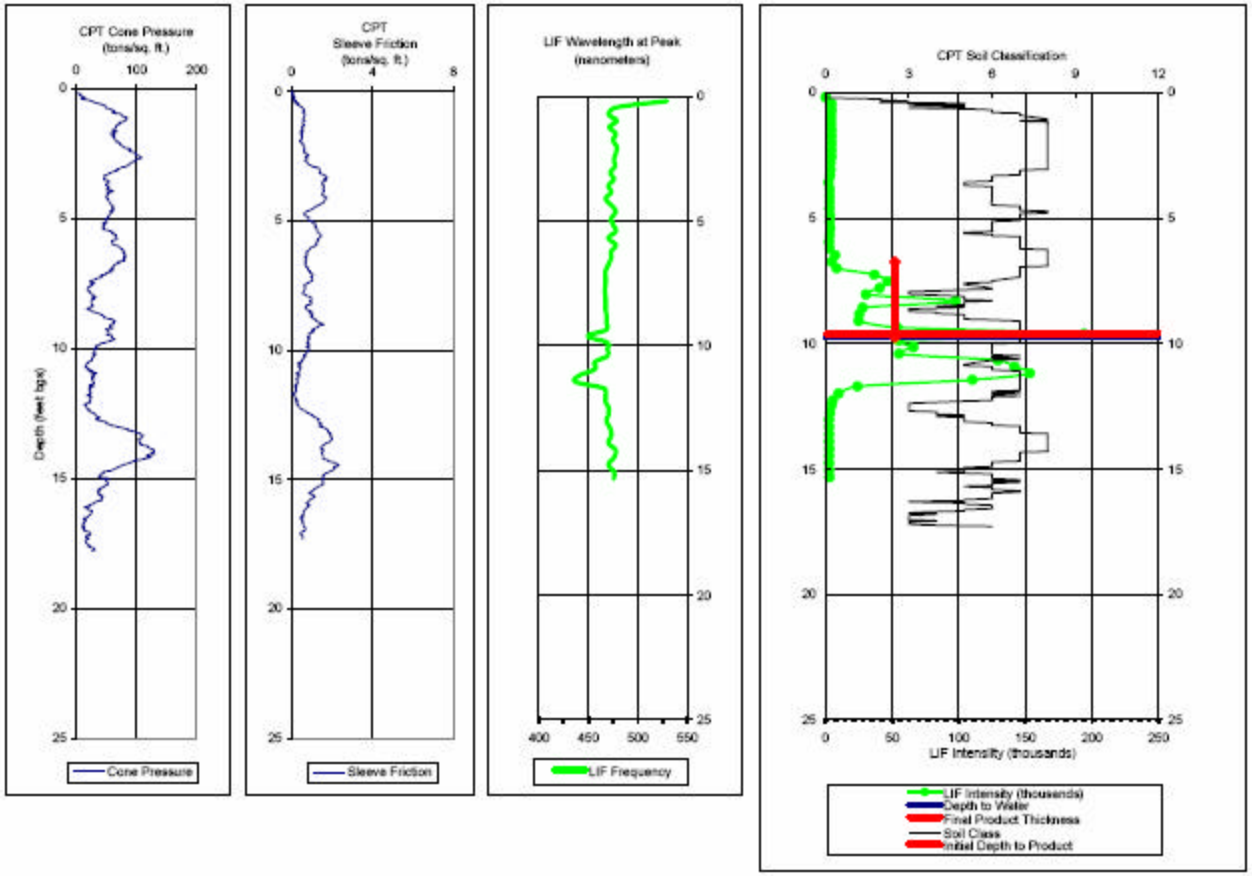
Discussion of Results -
90% of the samples from this investigation contained TPHd in higher concentrations than TPHg. This sample contained 360 mg/kg TPHg and no detectable TPHd. The other two TPHg dominant samples were from sites 14 and 1. The analytical results are slightly lower than expected based on the moderate LIF signature at the sample depth. The sample description is consistent with the CPT log.

Analytical Results (mg/kg)	
TPHd	ND
TPHg	360

Preliminary Draft
4/24/07

3.0 ft. Product

Summary Log for FA02-10-LIF
Naval Air Station Fallon
Site 02
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
7-12 (ft bgs)	9.74	9.73	3.0

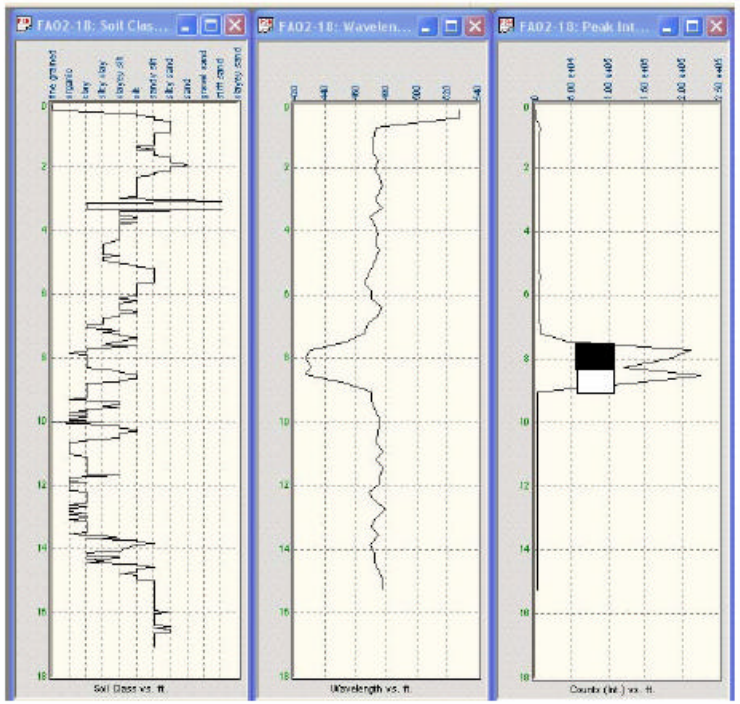
CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained*
12 Sand to clayey sand*
* = overconsolidated or cemented.

Elevated Fluorescence, but Lab Non-Detect

SCAPS Soil Sample Log
Site 02
Naval Air Station Fallon Nevada

Sample ID: **FA02-18-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **7.5 to 9.0'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale –
This sample was selected to confirm a strong LIF response in a fine grained soil interval. CPT data at the point of analysis indicates a clay interval surrounded by interbedded coarser materials typified by clayey silt.

Sample Description -
Silty SAND (SM/ML), light olive brown (2.5Y 5/4), wet, no stain or odor.

Discussion of Results -
The sample was tested for TPH as gasoline and diesel. Results were non-detect throughout both the gasoline and diesel range. This is a significant departure from the strong LIF response. There was no contamination evident in the sample. The conclusion is likely limited either to a false LIF positive or a very discontinuous contaminant emplacement. Additionally, a disproportionate number of basewide results during this investigation analyzed in clay zones (by CPT) were in poor agreement with the LIF.

Analytical Results (mg/kg)	
TPHd	ND
TPHg	ND

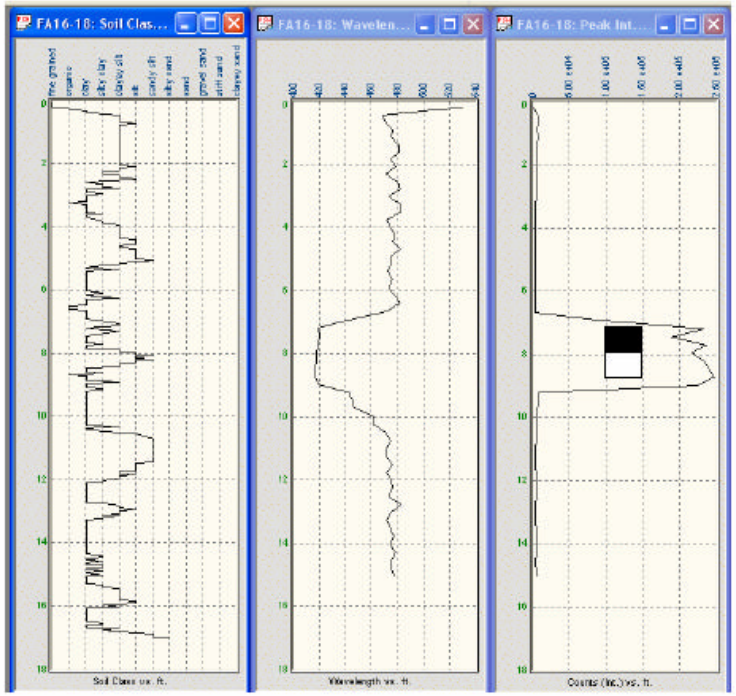
Preliminary Draft
4/24/07

Elevated Fluorescence, but Lab Non-Detect

SCAPS Soil Sample Log
Site 16
Naval Air Station Fallon Nevada

Sample ID: **FA16-18-SS-01**	Sample Date: **2-15-07**	Sampled By: **F. Essig**
Sample Interval: **7.2 to 8.7'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Analytical Results (mg/kg)	
TPHd	ND
TPHg	ND

Description of Data and Sampling Rationale -
This sample was taken within an LIF response that was very strong and vertically extensive. This zone was targeted to correlate a strong LIF response within a fine grained interval. Analysis was as requested at 7.45 feet, well within the robust LIF fuel signature. The CPT log shows thin interbeds ranging in thickness from less than 1 to approximately 6 inches within a relatively massive clay layer

Sample Description -
Predominantly very fine grained silty SAND (SM), grading into a sandy silt with some sand interbeds, light olive brown (2.5Y 5/4), saturated, no stain or odor.

Discussion of Results –
The sample was tested for TPH as gasoline and diesel. Results were non-detect throughout both the gasoline and diesel range. This analytical result has no agreement with the LIF data. There was no contamination evident in the sample. This represents either a false LIF positive and/or strong contaminant concentration heterogeneity. As with most of the other cases of poor LIF/CPT correlation, this sample was analyzed at a clay interval (CPT).
The observed sample lithology is coarser than the CPT classification.

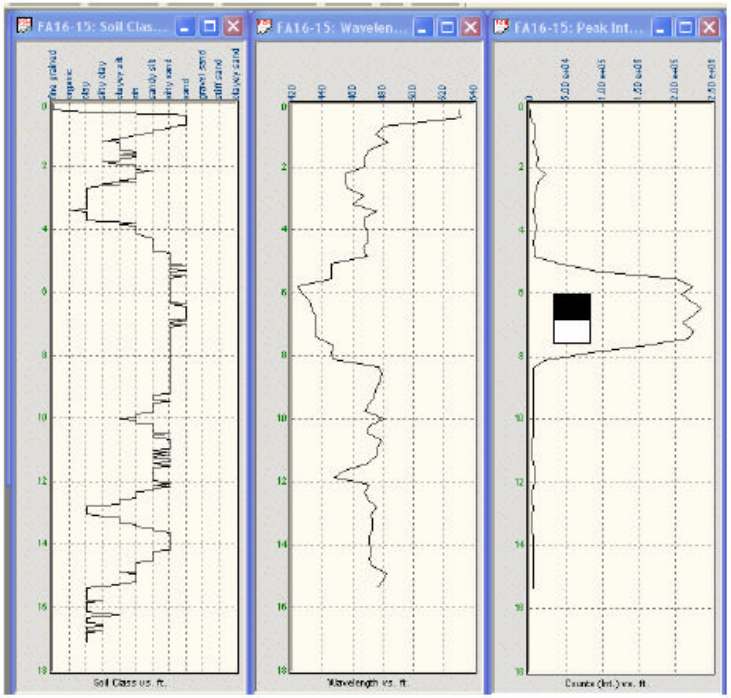
Preliminary Draft
4/24/07

Soil Fluoresces, Low Lab Result, and …

SCAPS Soil Sample Log
Site 16
Naval Air Station Fallon Nevada

Sample ID: **FA16-15-SS-01**	Sample Date: **2-14-07**	Sampled By: **F. Essig**
Sample Interval: **6.0 to 7.5'**	Percent Recovery: **50%**	

CPT Soil Class | Wavelength @ Peak | Peak Intensity



Description of Data and Sampling Rationale -
The sample was chosen within a thick vertical zone showing elevated LIF response. The lithology was characterized by interbedded fine and sandier units. The analysis depth as mapped by the CPT was within a sand interval.
The CPT log indicates sand throughout the sample interval.

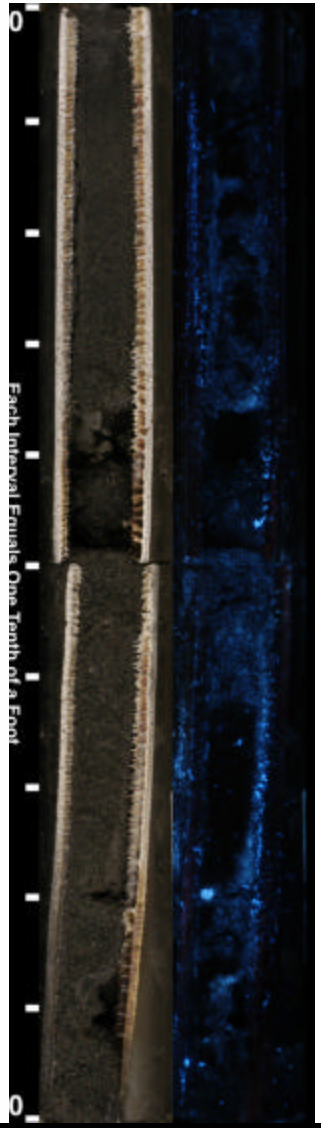
Sample Description -
Fine SAND (SP), dark green gray (5GY 5/1), saturated, moderate hydrocarbon odor.

Discussion of Results -
The sample was analyzed for TPH as gasoline and diesel. Results were 150 mg/kg TPHd and 46 mg/kg TPHg. The results are lower than expected based on the strong LIF response.

The sample description of fine sand is consistent with the silty sand indicated by the CPT.

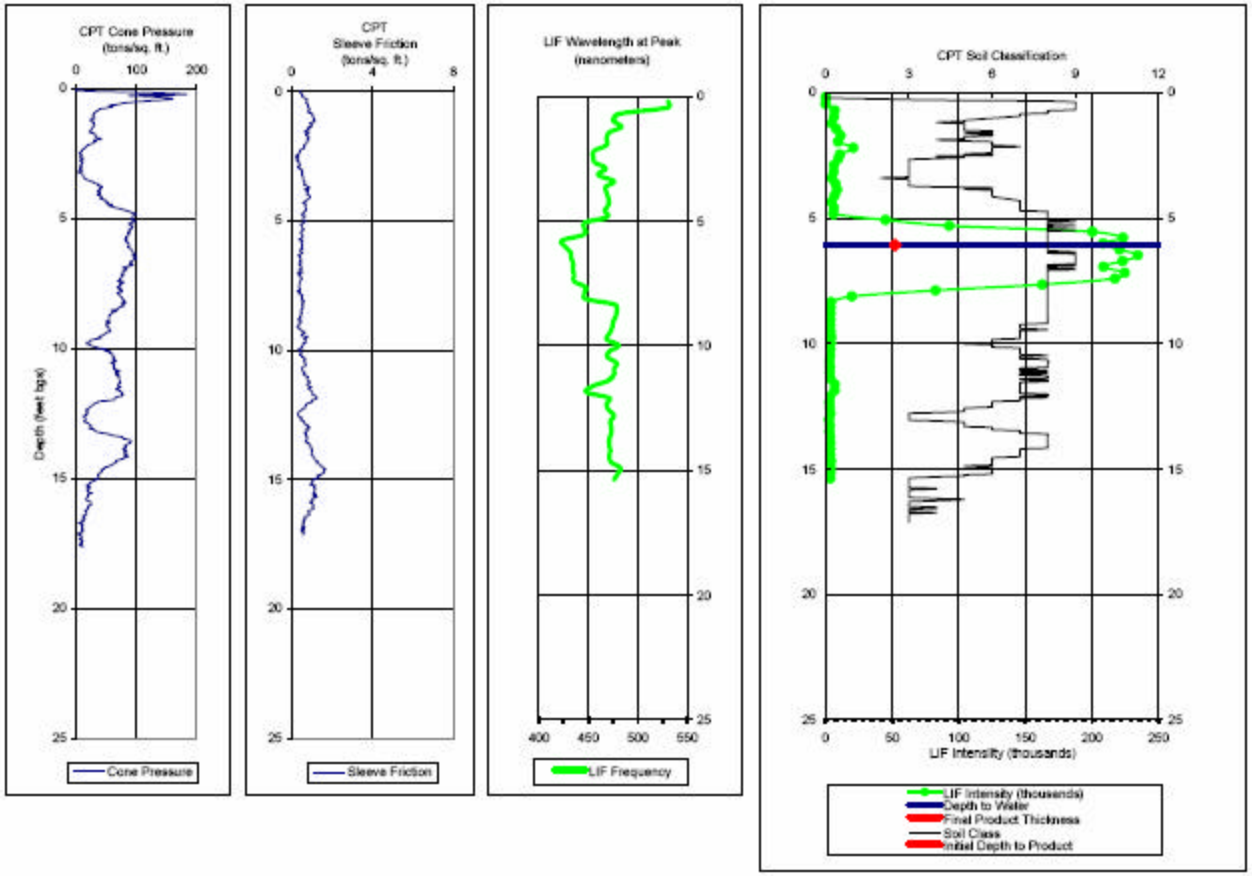
Analytical Results (mg/kg)	
TPHd	150
TPHg	46

Preliminary Draft
4/24/07



… 0.01 Feet of Product

Summary Log for FA16-15-LIF
Naval Air Station Fallon
Site 16
Site Characterization and Analysis Penetrometer System (SCAPS) Data



Screen Interval	Initial DTW (ft bgs)	DTP (ft bgs)	Final Product Thickness (ft)
6-11 (ft bgs)	6.07		0.01

CPT Soil Classification, Robertson and Campanella, 1988
1 Sensitive fine grained
2 Organic material
3 Clay
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 Sand to silty sand
9 Sand
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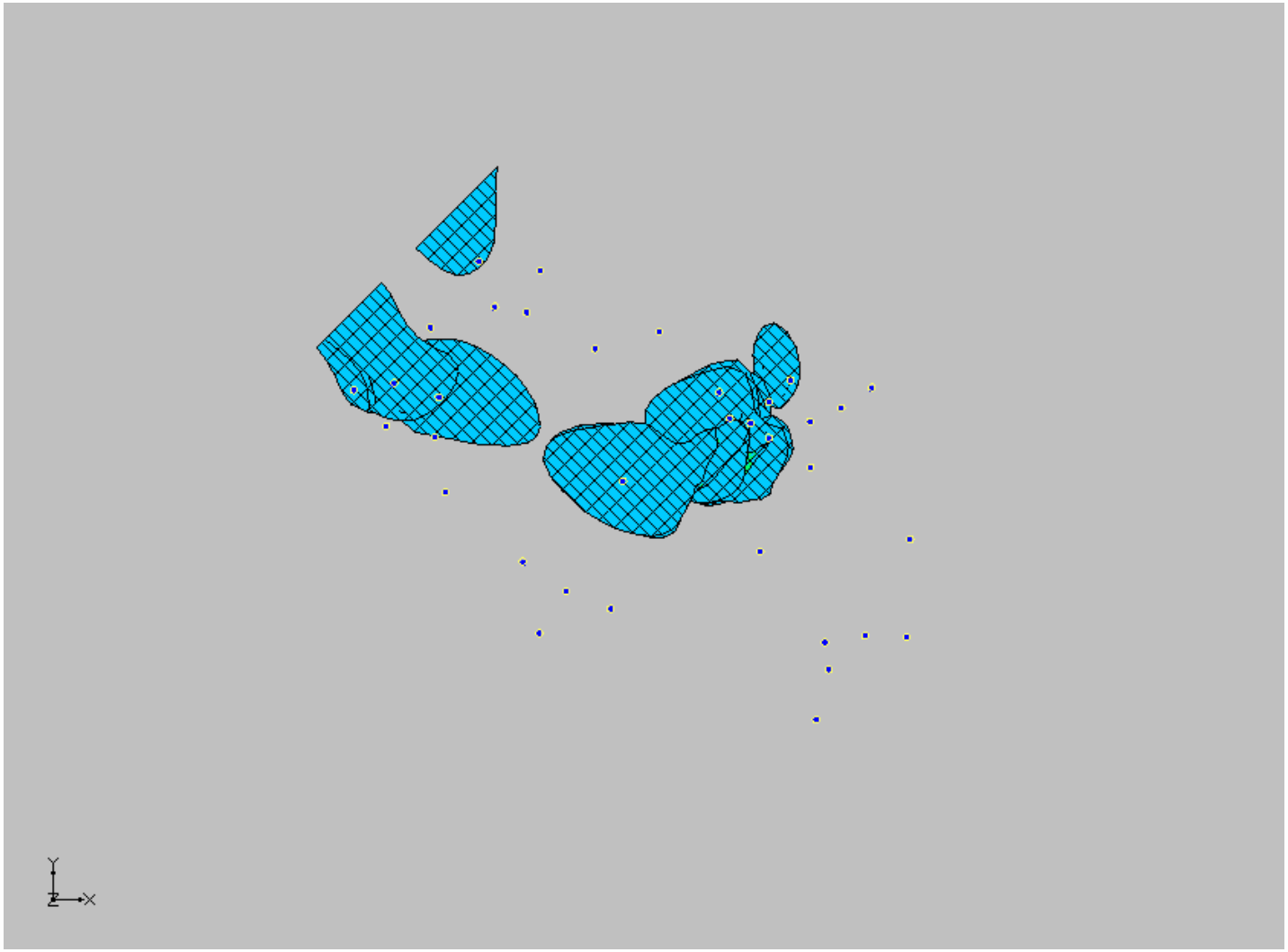
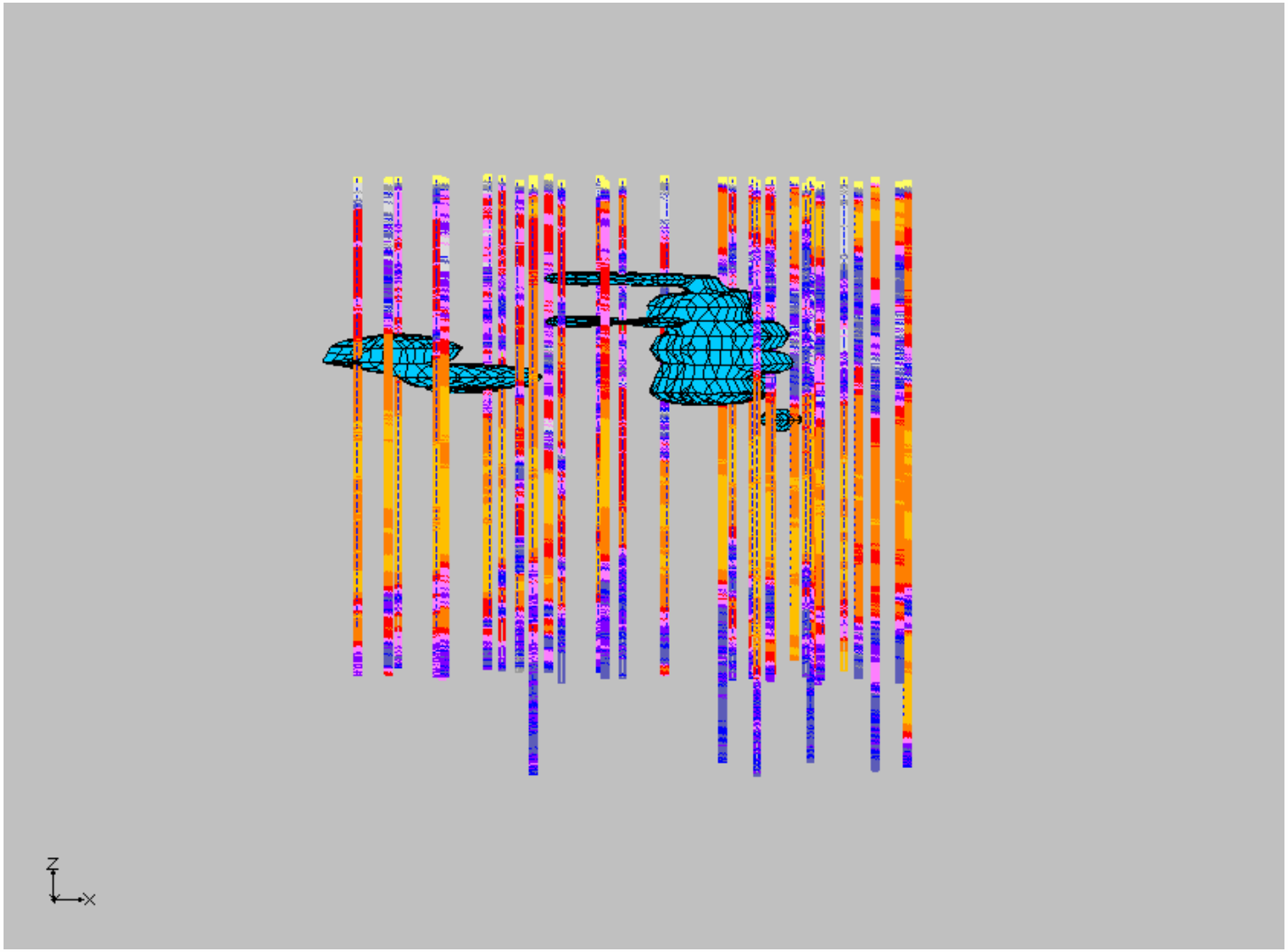
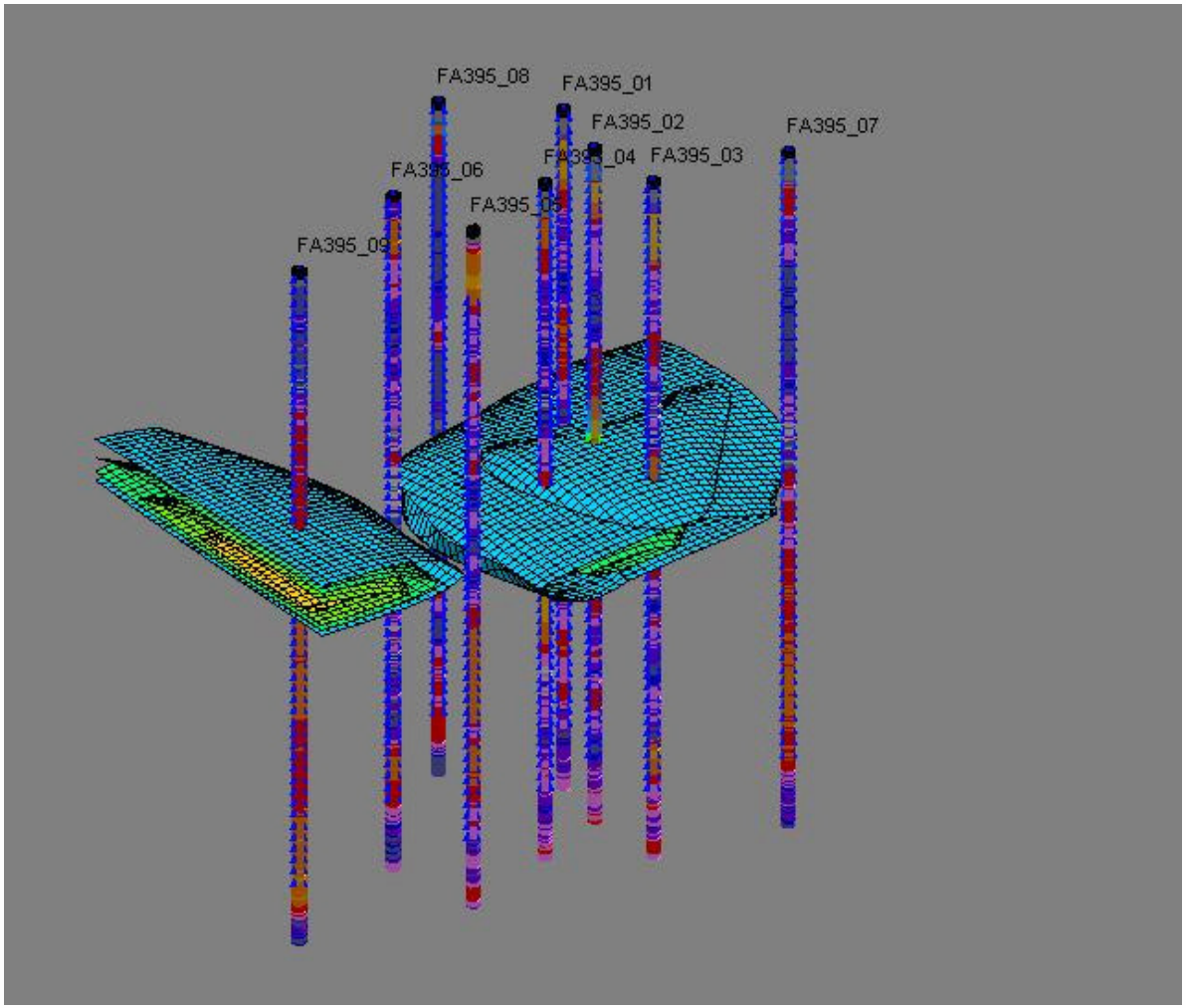
Site 1



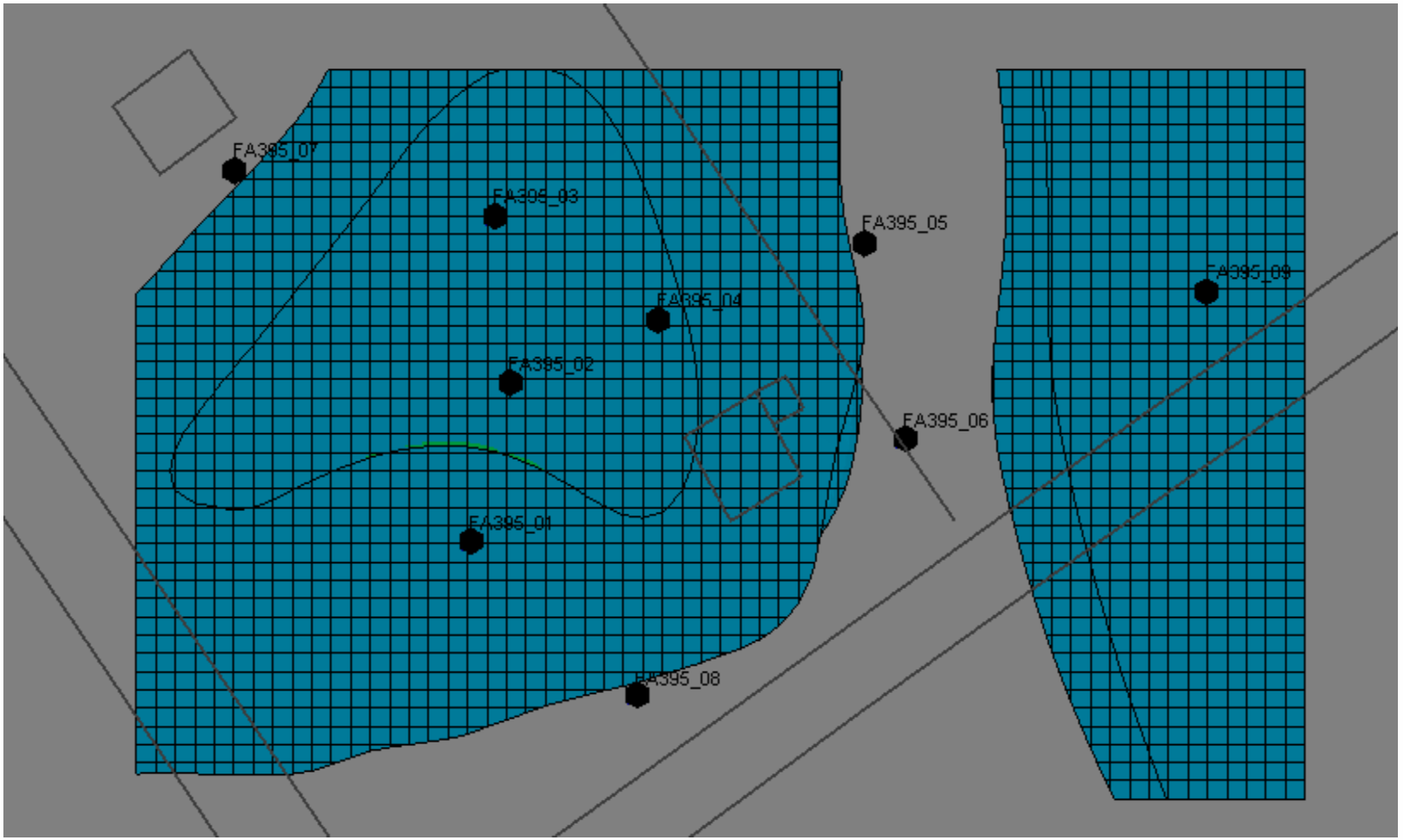
Site 1



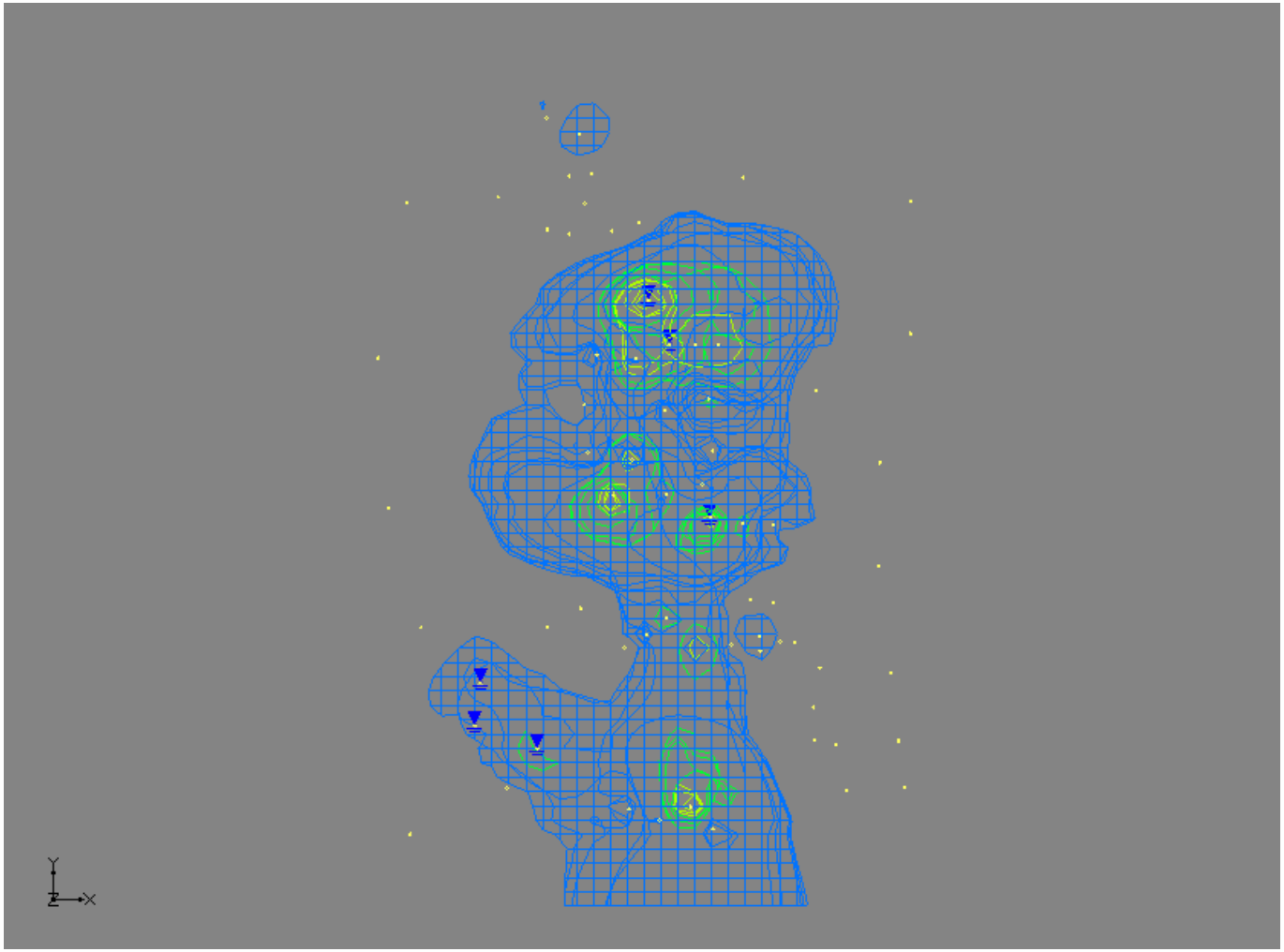
Site 395 Oblique View



Site 395 PlanView



Site 16



Site 16